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# Better Crops with PLANT FOOD

The Whole Truth—Not Selected Truth

R. H. STINCHFIELD, *Managing Editor* SID NOBLE, *Editor*
*Editorial Offices:* 19 West 44th Street, New York.

VOLUME X NUMBER THREE

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|---|---|---|---|---|
| Nearly Disease-free | May 1 | 51.3 | – .5 | 3:1 |
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| | May 21 | 45.6 | +1.8 | 33:1 |
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| Average Quality | May 1 | 44.3 | + .7 | 3:1 |
| | May 11 | 43.3 | +5.9 | 4999:1 |
| | May 21 | 43.0 | +3.1 | 115:1 |
| | May 31 | 40.3 | +3.4 | 500:1 |

* Odds of probability greater than 30 to 1 indicate that the increase or decrease very likely is significant and is not due to experimental error.

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EWING GALLOWAY

*"My Valentine"*

Better Crops with PLANT FOOD

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The holidays are over
and here come —

# Taxes

By Jeff McDermid

FORGIVE me if I seem to select a bone of contention from the aftermath of the holiday feast to chew upon.

This ossified morsel which I have taken up is not a wish-bone, to be disposed of amid pull-hauling merriment, nor a drumstick limited to some favored one, for this particular bone of contention never grows marrowless or meatless, although it rivals the whitened fossils of pre-Cambrian times in age and mustiness.

To many people it assumes the form of a closet skeleton that gibbers at the honest citizen and makes the crafty eluder of public burdens cast about him for new loopholes to escape its haunting pursuit.

Its toothless maxillary grin and the grasping gestures of its rattling metacarpals and phalanges play hob with peace of mind. Its annual seance makes us remember that the body politic, like the body corporal, demands support and sustenance.

Death and taxes! Like the mask of the red dissolution pictured by Poe as coming to cower the prince at the festival, this ancient scarecrow writhes in a spotlight of green ghastliness to become the bogey of the burgeois and the nuisance of the newly rich. We can die but once, but this statistical spectre comes to leer at us annually. No political medium or economic clairvoyant has been able to lay this rest-

less, recurring disturber.

Bar the door, and he creeps like a slithering shadow through the window. Cry "Avaunt!" and he shrieks, "I won't!" Shout "Cease!" and he answers "Assess!"

Yes I cannot help feeling that this ghost is to a great extent a hoax after all, and that he is not so much dreaded by the provident people of my acquaintance as he is by the other kind. I presume that one's conscience has a lot to do with the visibility of torturing spirits anyhow. That is, taxes bring a sort of *delirium tremens* of the *inebriated intelligence.* They show their worst symptoms after the worst spending spree of the whole year. It is too bad that tax time follows on the heels of the holidays.

JUST why humanity in all recorded history has recoiled at paying a pecuniary tithe to society with which to defray the cost of distributing common benefits is hard to determine. The root of the fettish can most likely be dug up in the tomes of political philosophy, but most of us are so busy gold digging to pay the tax collector that we do not pause to reason why we nurse this ancient grudge.

If I take my neighbor's case for reference purposes, it is merely to demonstrate the first reason why Americans dislike taxes in the same ratio as they love luxury. I say *Americans,* because the people of the mother countries act differently about this matter, that is, they do less raving about it from day to day. But when the climax comes and the w. k. camel gets his last straw, they commit murder or join the Soviet.

Now my neighbor's first grudge against taxes is that they are imposed by *some one* in *authority,* backed by the sheriff if need be. His tax bill cannot be put in a pigeonhole and forgotten. It haunts him, not because of its justice or injustice, but because there is no postponement of settlement. I may add that if there were discount for cash he would not be any better off.

In fact, it is like his automobile payment—unless it is made on time a man will come around and take something valuable away from him. The auto dealer and the tax collector have first lien on the lean purse of my impatient, luxury-loving neighbor. His coal dealer won't see any dust for quite a spell; his ice man is frozen out; his grocer is in a pickle; and his tailor pants for his pay.

Last night he borrowed fifty seven dollars and thirty six cents from me to liquidate the bill that the government presented. Before leaving, he asked my advice on a new electric static-eliminator which he was planning to buy, and he said he expected to trade in his old car for a new iron-clad contract at eighteen per cent interest in the spring. I asked him why he didn't take a taxi so he could pay his taxes. They haven't sent the kids over to borrow a cup of butter since!

The reason he hates taxes is because they get the jump on him and pin him down to business. Yet he loves that auto man who also has him buffaloed, and he is going right back there soon to be gouged at the same old garage! It's beyond me.

BUT once his taxes are paid, my neighbor eases back again into a complacent state of mind. When I attempt to talk civic politics with him from the fresh supply I get daily from the city hall crowd, he shrugs his shoulders and says: "Bah! Don't bother me with politics; it's rotten anyway—what's the chances for the Sox copping the pennant next season?" This means that there are several golf balls and a dozen pop bottles between him and his next tax receipt. He should worry!

He is as indifferent about the way the finance committee spends his annual contribution to society as he is

(*Turn to Page* 61)

A good farm home.

# How Well Does *the* Farmer Live?

*By Arthur P. Chew*

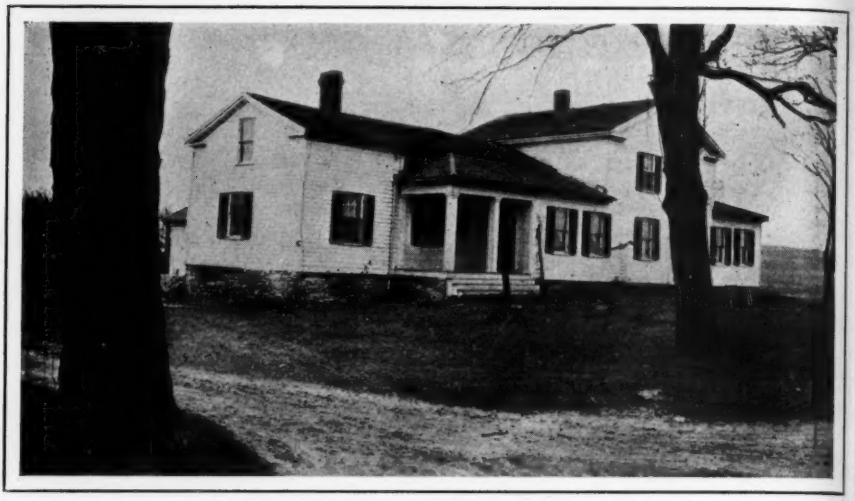
U. S. Department of Agriculture

HOW well or ill do our farmers live? As a group, are they better or worse off than city folk?

These are difficult questions because city and country standards of living are not really comparable. City families may handle more money than farm families, but they have to pay out more. On the other hand, not all the economic satisfactions of the farm family can be fairly expressed in terms of money. Obviously, for example, food and fuel produced on the farm and consumed by the farm family sustain life as well as an equal quantity consumed in the city; but the price of these things on the farm and their price in the city are poles apart.

Should one, in estimating the worth of the farm family's living, reckon food and fuel at farm prices because no more could be got for them if they were sold, or at city prices because if the farm family had to buy them it would have to pay city prices? It is a nice question. Or consider what allowances should be made for the value of the farm home. It may be a better place to live, and yet not be worth nearly as much money as the average city home, with its high site value and its expensive sewer connections and electric wiring.

Nevertheless, we are not wholly without a basis for judging what sort of a life the American farm affords. In the last few years the Department



An average farm home in Livingston county, N. Y.

of Agriculture, in cooperation with various state agencies and agricultural colleges, has made numerous detailed studies of farm standards of living. These studies have covered selected localities in many widely separated states. They show what becomes of the farm income—what part of it goes for food and clothing, for health maintenance, for church and social activities, for recreation, and so on.

One can not tell much from these studies as to the relative advantages of city and country life, because the money expressions of city and country values are not equivalents. In the country, for example, no scarcity price is put on the air and sunlight; yet they have as much utility in the farm home as in the city flat. Then, too, it is hard to decide what city groups should be taken for comparisons with the farm group. The farmer is an economic hybrid, both worker and capitalist, without an urban prototype. Yet family-living investigations do give us an idea how the farmers live. They show differences in ways of life among different groups of farmers, and give a rough measure of some of the contrasts between rural and urban satisfactions. Incidentally, they explode the notion that the American farmer is universally better off than his European brother. Generally he is, but not always.

### *Europeans Live Well*

"Living standards of some European farmers," says Dr. C. J. Galpin, who has charge of the Department of Agriculture's rural life investigations, "are better than are found in certain localities in the United States. It is no longer true to say that European farmers generally live poverty-stricken in hovels. Conditions in Europe are bad in some cases. But that is also true of the United States. A great number of European farmers have standards of living comparable to what we have in this country. I visited 13 European countries in 1926. European farmers are consuming more and better goods. They are building new and better homes. They are determined to have more things and to live more comfortably, and are realizing their ambition."

In glancing over the picture of American rural life as sketched in family-living studies, hasty generalizations should be avoided. It would not do to consider as typical, for example, the conditions shown in the

most recent of the surveys. This was made in the Piedmont district of Georgia, and showed an unsatisfactory situation. Records were obtained from 288 white families in Gwinnett county, Georgia, an average community of small cotton farmers.

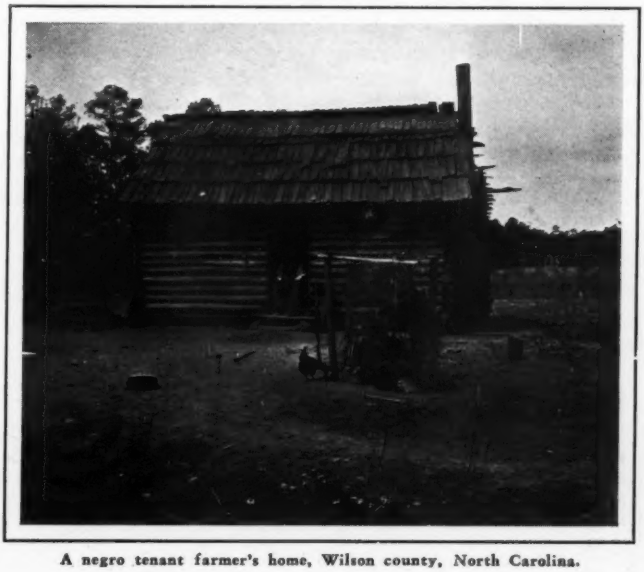
### *Live on $120 per Year*

These families scraped along in 1924, not by any means a bad cotton year, on an average expenditure for family living of only $291, supplemented by food and fuel from the farm. This farm-produced subsistence, plus house rent, was worth an average of $306 per family. All told, therefore, the values consumed in 1924 by the average farm family in Gwinnett county amounted to less than $600. The families averaged five persons each. It is estimated that possibly 100,000 white farm families live on about the same plane in the northern border of the Cotton Belt east of the Mississippi River.

It is a big jump from Gwinnett county standards to what seems to be common in more progressive agricultural communities. An investigation has been made into the expenditures of 2,886 farm families in 11 widely separated states. This showed, for the period from 1922 to 1924, an average annual family expenditure of nearly $1,600. That may look small to the city man, but it is riches compared with the outlay of small cotton farmers in the northern Cotton Belt. It is well to remind ourselves, moreover, that money doesn't tell the whole story of farm family living.

Food and fuel furnished by the farm and house rent are very conservatively valued by the investigators. Food and fuel are reckoned at what they would be worth if sold at farm prices. House rent is based on the cost of producing the farm home, with only a negligible allowance for site value. These are important items in the sum of the farm family's economic satisfactions. In gaging farm living standards such items ought perhaps to be valued at what they would cost if they had to be bought, since it is the utility of goods rather than their money cost that determines how well or ill a family is to live.

One of the more prosperous farm communities covered in Government family living studies is Livingston county, New York. Here farming is diversified and moderately profitable. The farmers produce hay, corn for grain and silage, wheat, oats, beans, cabbage, and sweet corn and peas for canning. Investigators visited 402 farms averaging 131 acres in size, and representing about 14 per cent of the total number in the county. There were 295 land-owning farmers and 107 tenants. These farm families, in



**A negro tenant farmer's home, Wilson county, North Carolina.**

the year ended September 1, 1921, had an average expenditure of $2,012, about a third of which represented food, fuel, and housing supplied on the farm without direct purchase. Possibly this third, had its direct purchase been necessary, would have cost double the amount credited to it.

### *Rival City Dwellers*

It would be hard to find equal prosperity in a representative group of city dwellers. Our Livingston farm families devoted about one-sixth of their income to "advancement," under which head the investigators include travel, vacations, automobiles, formal education, recreation, and church and social work. Seventy-five per cent of the families owned automobiles, and the largest single advancement item was the cost of operating and repairing the car. There is a natural tendency, as incomes increase, for more to be spent to satisfy cultural wants. In Livingston county the high average of $38 per family was expended in the year for education, books, and travel. Out of 92 families having children 23 years or older, 25 families had sent at least one son or daughter to college.

Nearly every home contained books and an abundant supply of periodicals. In Gwinnett county, Georgia, the average annual outlay for reading matter was only $2.28. Practically every home in Livingston county contained some kind of musical instrument, commonly a piano or a gramophone and not infrequently both. More than two-thirds of the families had telephones. For clothing the average expenditure per family was $277, compared with Gwinnett county's $82. It is not necessary to dress smartly on the farm every day. Nevertheless the Livingston county people spent only a little less for clothing than a representative urban group studied by the Department of Labor. Yet the county is not considered to represent the peak of American agricultural prosperity, though it is perhaps not far from the top.

### *Marginal People*

Some idea of its relative position may be gained from the average expenditure of farm families covered in studies made in the 11 states already mentioned. In New Hampshire the average was $1,839; in Vermont, $1,553; in Massachusetts, $1,948; in Connecticut, $1,559; in Kentucky, $1,493; in South Carolina, $1,482; in Alabama, $1,615; in Missouri, $1,897; in Kansas, $1,492; in Iowa, $1,669; and in Ohio, $1,541. It is evident from these figures that a considerable proportion of our farmers live well above the poverty line.

But low standards prevail over extensive areas. Perhaps the bottom level is found among some of the agricultural Indians of the Southwest. These people, originally hunters, are only just acquiring agricultural habits and still live in a very primitive way. A step upward would bring us to the so-called Mexicans of Arizona and New Mexico, in whose veins there is more Pueblo than white blood.

(*Turn to P.* 57)

A farm laborer's cottage in Hardy county, West Virginia.

The yield from this plot of alsike and timothy hay on peat soil at Coddington, Wis., was 2.4 tons to the acre in 1927. In 1926 muriate of potash was applied at the rate of 125 pounds per acre preceding the seeding of oats which yielded 56 bushels per acre.

# Figuring Out Menus *for* Wisconsin Crops

*By G. E. Langdon*

Wisconsin College of Agriculture

ALTHOUGH crops, like persons, vary in their food requirements, yet on many of the land types in Wisconsin, more potash is often a profitable addition to the crop menu.

The fertilizer requirements of sandy soils, peats, and loams were studied intensively again last year at the Wisconsin College of Agriculture; and the soil specialists at the various branch stations report a number of interesting facts.

On the sandy soils of central Wisconsin, it appears that potash fertilizers can be used very profitably in increasing the yields of alfalfa.

On non-acid peat soil, it was found that the use of 300 pounds of muriate of potash to the acre just about doubled the yield of mixed clover and timothy hay.

On silt loam soils, the application of both potash and phosphate fertilizer gave marked beneficial results when applied to the barley crop.

In tests with potatoes on sandy loam soil, the application of 750 pounds to the acre of 4-8-6 fertilizer increased the yield of No. 1 grade potatoes from 94 bushels to the acre on the untreated plot to 153 bushels to the acre on the fertilized plot.

In work with canning peas the tests indicated that the use of nitrate fertilizer as well as superphosphate and potash showed progressively increasing returns per acre.

Another interesting phase of the

experimental work in Wisconsin has been that of the relation of acidity to the production of good alfalfa and clover. It now appears that often the limiting factor for good alfalfa may be phosphorus or potash.

A. R. Albert, in charge of the branch station at Hancock, Wisconsin, reports that on the sandy soils of central Wisconsin, applications at the rate of 300 pounds of muriate of potash to the acre increased the alfalfa yield from 4,020 pounds to the acre on the untreated plots to 7,370 pounds on the plots treated. On this basis, he explains, the additional yield of alfalfa pays a profit of $6 an acre above the cost of the fertilizer material used, and in addition there is the residual benefit of the potash that will be received in the form of larger crops in the immediate succeeding years.

### *Results from Potash*

"Applications of 300-400 pounds of 16 per cent acid phosphate (correspondingly less of higher grades) with the 200-300 pounds of muriate of potash proved highly profitable on alfalfa seedings where no farm manure was available," he declares. When manure was plentifully supplied, the lower amount of potash (200 pounds) and the higher amount of phosphate (400 pounds) gave best results. On farms with this type of soil, where a limited amount of manure is produced, frequently it will be found profitable to top-dress the established alfalfa fields with 0-9-24 or 0-9-27 commercial fertilizer on a basis of about 400 pounds to the acre. Important increases in yield also have been obtained when potash fertilizer has been applied to red clover seedings. With clover it frequently seems that the need for potash is greater than the need for lime.

During the past few years, experimental work has shown clearly that surprisingly good results are obtained by the use of potash fertilizers on the non-acid peat soil such as that at the Coddington branch experiment station.

On this type of soil, early varieties of potatoes have given excellent results when fertilized on a basis of 400 pounds of 0-3-38 fertilizer to the acre. This past season early Ohio potatoes yielded 245 bushels to the acre.

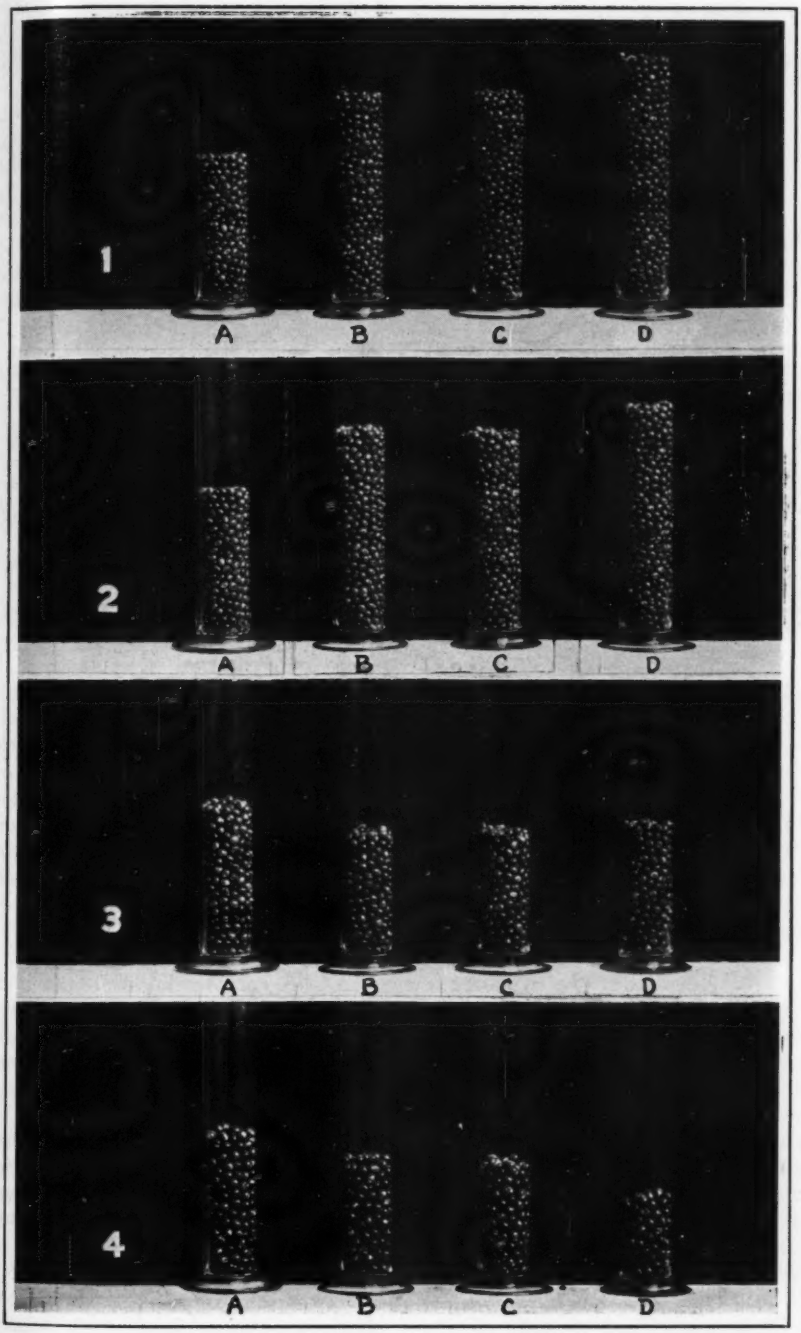
Without fertilizer the yield was only 40 bushels and these were mostly culls. On this peat soil, it has been found inadvisable to check-row the potatoes. Highest yields are obtained when the potatoes are planted 12 to 18 inches apart in the row. Carrots and rutabagas seem to thrive on this peat. In 1927 early Chantenay carrots averaged 866 bushels to the acre, while the rutabagas averaged 24 tons of roots and 12 tons of tops to the acre.

"Potash fertilizers have not shown much benefit when applied to the oat crop, but 300 pounds of acid phosphate increased the yield from 46.2 to 55.3 bushels to the acre," declares F. L. Musbach of the Marshfield Branch Station. "However, with barley both potash and phosphate fertilizer gave marked beneficial results. The barley plot receiving no commercial fertilizer produced 42.6 bushels to the acre while the yield from the field given 300 pounds of acid phosphate to the acre was 49.8 bushels. When in addition 50 pounds of muriate of potash were added, the yield was increased to 58.5 bushels to the acre."

### *Potato Crop Important*

"Barley also showed a striking response to the application of lime, the yield being increased from 43.9 bushels to 56.8 bushels to the acre. On the other hand, there was no increase in the yield of oats due to the application of lime.

"At the Spooner branch station, the potato crop is important, due in part to the sandy loam soil which makes possible a very high quality potato. An application of 750 pounds




Fertilizers affect the quality of canning peas. Row (1) represents first grade peas; (2) second grade peas; (3) third grade peas; and (4) fourth grade peas. Using the yield from the untreated plots (A) as a basis of comparison, the heights of the other columns represent the comparable yields of peas of the various grades from the fertilized plots. (B) peas from plots fertilized with phosphate, (C) with phosphate and potash and (D) with phosphate, potash, and nitrate.

to the acre of 4-8-6 fertilizer increased the yield of No. 1 grade potatoes from 94 bushels to the acre on the untreated plot to 153 bushels to the acre on the fertilized plot.

"When two-thirds of this fertilizer were applied at planting time, and the remaining one-third when the plants were 6 to 10 inches high, the yield was increased to 166 bushels to the acre. This latter method seems to be the most profitable, even after allowing for the somewhat greater labor of making two applications of the fertilizer. It was noted that considerable injury resulted to the potato plant when the fertilizer was in direct contact with, or immediately above, the seed piece. The best results came from applications of the fertilizer below the seed piece."

### *Increasing Returns*

The Colby silt loam soil, on which the Marshfield branch station is located, ordinarily produces a good yield of excellent quality canning peas. In a study to determine the effect, if any, to be obtained by applying fertilizers to the canning pea crop, Mr. Musbach this past season found that the use of nitrate fertilizer as well as superphosphate and potash showed progressively increasing returns per acre. This is rather unusual, for ordinarily it does not pay to apply nitrate fertilizer to legume crops such as peas. The explanation for this increased profit from applications of fertilizer is due to a large increase in the proportion of No. 1 and No. 2 peas from the fertilized plots. As the canning peas were paid for on a basis of ten cents a pound for No. 1, six cents for No. 2, two cents for No. 3, and one cent for No. 4, it will be seen how greatly was the value of the crop enhanced when the fertilizer increased the percentage of No. 1 and No. 2 peas, as well as augmenting the total weight of the crop.

The important effect of the fertilizer is to produce a more even start in the growth of the crop, thus causing the peas to mature more uniformly. This preliminary report indicates considerable promise of making it possible to improve the grade of canning peas, as well as the total yield, by the application of commercial fertilizers. Further trials are necessary before final conclusions can be drawn.

Another interesting phase of the experimental work in Wisconsin has been that of the relation of acidity to the production of good alfalfa and clover.

A. R. Whitson and H. D. Chapman have shown that excellent alfalfa has been produced in a number of soil types in Wisconsin in which there was considerable acidity. It appears to them that often the limiting factor for good alfalfa production may be phosphorus or potash.

"Acidity is a condition very common in the soils of regions having annual rainfall in excess of 25 inches," declares Mr. Whitson. "This acidity is commonly associated with a deficiency in the amount of available lime in the soil, and the belief is common that this acidity is responsible for many cases of poor crop yields, and even of crop failures as with the winter-killing of alfalfa and clover.

### *No Close Agreement*

"Available lime frequently exists in soils in considerable amounts even though the soil is acid. For this reason, it is important to determine directly the amount of available lime in a particular soil, rather than simply the soil acidity.

"A solution of carbonic acid has given much promise in testing the amount of available lime in soil samples. While in general the soluble lime is less in the more acid soils, there is no close agreement between degrees of acidity and the amount of soluble calcium (lime). Ordinarily soils showing 500 to 600 pounds of available calcium per acre have not

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The trading floor of the Kansas City Board of Trade.

# America's Markets

## NUMBER THREE: *The Chicago Market*

### *By Frank George*

U. S. Department of Agriculture

CHICAGO, the second largest consuming market in the United States, is also America's agricultural clearing-house. The Chicago stockyards alone do a business of more than $3,000,000 a day. The city is an important diversion and concentration point for perishables from the West and Southwest. Much of Chicago's receipts of dairy and poultry products are marketed ultimately outside the city.

The Chicago population has increased approximately 401,000 persons since 1920 and now totals more than 3,100,000 consumers. It is estimated that approximately 4,000,000 persons in Chicago and its suburban districts receive their food supply through the Chicago market. Estimating that each farmer produces food for his own family and 10 other persons, the labor of 400,000 farmers is required to feed Chicago's vast army

of consumers.

New York's traffic congestion in food handling is limited practically to market areas, but the congestion in Chicago spreads through the entire Loop district which is the heart of the business area. Chicagoans acquire the agility of jack-rabbits combatting the traffic maze; the visitor spends most of his time on the curb. On a normal week-day between 6.30 a. m. and 6.30 p. m. the outbound vehicular traffic from the Loop district will total 15,000 horse-drawn vehicles, 17,180 motor trucks, 42,130 passenger automobiles, and 8,360 surface cars.

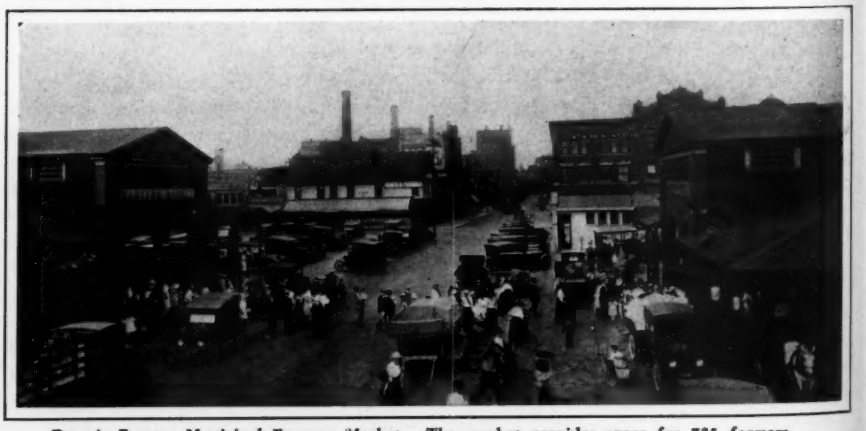
### *Has Many Units*

Historic old Water Street market on the banks of the Chicago River, with its narrow streets, dilapidated buildings, and unsanitary conditions, has passed within the last three years, replaced by what is said to be the largest produce market in the country, at Fourteenth Street and Racine Avenue. The new wholesale produce market cost $17,000,000, and provides accommodations for upwards of 250 produce firms.

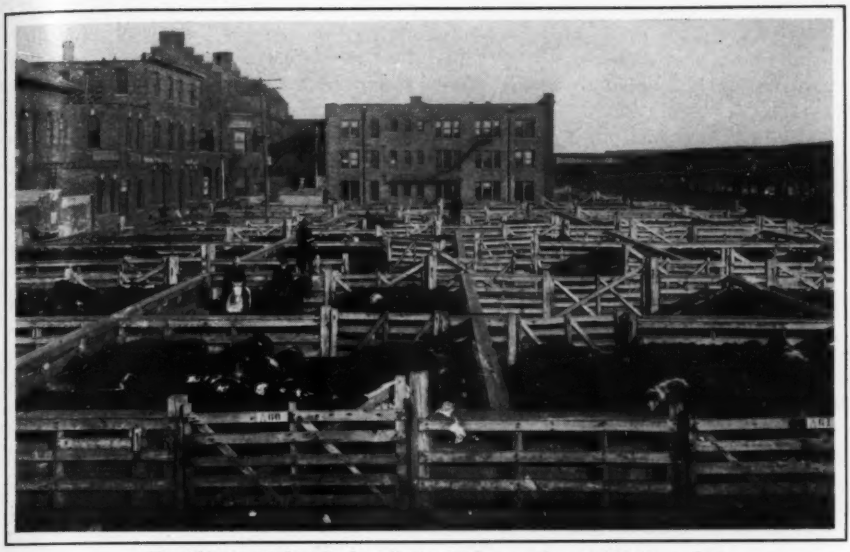
The market has 166 uniform stores or units, each three stories high with a basement and frontage of 24 feet. A receiving yard has a capacity of 3,000 cars, and a sales and delivery yard a capacity of 500 cars. It is expected that the new market will effect savings of $3,500,000 a year in distribution costs. The name of the famous old street is perpetuated in the new home of the trade, and takes the form "No. 00 South Water Market."

The South Water market is the principal destination of farm products for Chicago, followed by the West Randolph Street market, the cold-storage plants, the Fulton Street market, and the butter-and-egg houses on Lake, Market, Wells, and West Kinzie streets. The South Water market is the wholesale market for fruits and vegetables, the West Randolph Street market is occupied by commission men and jobbers who do mainly a jobbing business, and the Fulton Street market is distinctly a poultry-and-meat market.

Farmers in 43 states contribute to the Chicago food supply. California is the largest source of perishables having shipped 14,256 carloads last year, made up largely of lettuce, oranges, grapes, and cantaloupes. Total unloads of 16 leading fruits and vegetables aggregated 59,349 cars last year, the tonnage including 14,856 cars of potatoes and 7,834 cars of apples. Following California, the principal sources of supply are Wisconsin, Michigan, Florida, Washington, and Idaho. Large quantities of products are motor-trucked to Chi-



**Detroit Eastern Municipal Farmers Market. The market provides space for 725 farmers.**



**The Chicago stockyards do a business of more than $3,000,000 a day.**

cago from surrounding producing areas, but figures on the volume are not available.

Chicago receipts of food products have increased markedly in the last 10 years, taxing transportation facilities and rendering obsolete the food-handling facilities established in earlier days of smaller population and less exacting requirements of consumers. Butter receipts last year were 195,545,000 pounds compared with 160,035,000 pounds in 1920; cheese receipts were 115,104,000 pounds against 81,597,000 pounds in 1920. Receipts of dressed poultry have increased from approximately 57,000,000 pounds to 78,000,000 pounds in the seven years, and receipts of eggs from 4,154,000 cases in 1920 to 4,575,000 cases in 1926.

### *No Provision for Expansion*

One is struck in a tour of the markets by the failure in earlier days to provide for future expansion in the establishment of food-handling facilities. Markets formerly in the center of population are now surrounded by business houses which have pushed residential districts to outlying areas. Many of the market buildings in some of the leading consuming markets are dilapidated and unsanitary, their usefulness long ago having been outgrown. Narrow streets and inadequate space between team tracks seriously hamper the use of motor trucks.

E. A. Duddy of the University of Chicago, following an extensive investigation of Chicago's traffic problems, declared that "it is difficult to see how relief is to be had from the team track situation as facilities stand at present. Trackage capacity is already strained to the limit at certain seasons, and the long-time trend of the perishable freight business is sharply upward. A permanent solution points to a radical departure from present methods of handling."

The railroad team tracks in Chicago were laid in the day of horse-drawn vehicles when the 20 to 24-foot driveways between tracks were wide enough to permit one rig to pass another backed up to a car door. The motor truck, 20 to 22 feet in length, backed up to a car door effectively cuts off inbound and outbound traffic with resultant confusion and delay. This factor of traffic delay which exists in all the large consuming markets is one of the large elements of

increasing cost of distribution. Fortunately, the new market in Chicago relieves most of the traffic congestion which formerly existed in South Water Street.

"Perishability and bulk of product," Professor Duddy found, "are factors controlling the hauling from team tracks. Wine grapes, bulk fruits and vegetables, generally low-grade and over-ripe commodities, will not stand handling through the markets, and are generally disposed of to peddlers and hauled from team track direct to consumer. In the case of wine grapes the buyers are small retailers or wine merchants as well as consumers.

### *Sold Off Wagons*

"Highly perishable fruits and berries which cannot safely be left in a refrigerator car are hauled as early in the day and as rapidly as possible. Because of rapid deterioration with handling, such commodities as berries, peaches, tomatoes, string beans, cantaloupes, table grapes, and lettuce are sold largely off the wagons without unloading into the store. During the season of large receipts many berries are hauled into storage and frozen for future use.

"Fruits and vegetables of lesser perishability may either be left in the refrigerator car on track or hauled into the market and unloaded into store or storage plant. Potatoes arrive in bulk and barrels. Early potatoes in barrels are sold at the track to truck-jobbers who haul direct to retailers, or they are hauled to the wholesale and jobbing markets. Sweet potatoes are hauled to South Water market. Late potatoes arrive in bulk and are hauled from the tracks at Sixteenth Street and at Grand Avenue to West Randolph Street, or by peddlers and truck-jobbers direct to consumers and retailers. A small proportion move into storage.

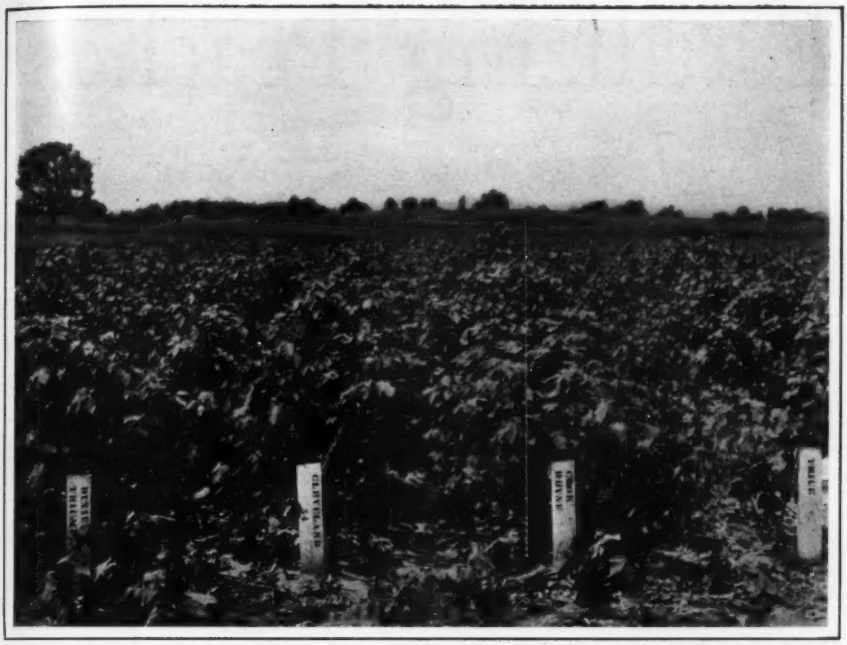
"Butter, eggs, cheese, and dressed poultry move immediately into storage either at a storage plant or in the store cellar. Shipments of butter arriving in less than carload lots may be hauled to the store for grading and reshipment off the market. At certain seasons of the year eggs move directly onto the market without going into storage. Live poultry is hauled to stores and dressed, or may be sorted and loaded out for reshipment."

Discussing the hauling and re-hauling of perishables in the Chicago area, Professor Duddy declares, "we are able to distinguish three distinct hauling movements, with some evidence that four and even five handlings occur. The first movement is the haul from railroad team tracks, from loading points in the producing areas about the city, and from other minor points of original unload within the city such as boat landings, storage plants, etc. It is characteristically a movement into the wholesale markets, though a considerable volume of produce moves directly to the consumer through the peddler. "The second hauling movement is from wholesale to jobbing market, but a large part of this movement is direct to the retailer from both wholesale and jobbing markets through the medium of the truck-jobber. The third hauling movement is typically from retailer to consumer. The fact that commodities are hauled both into and out of storage accounts for a fourth and possibly a fifth hauling."

A separate study was made of the distribution of unloads at auction team tracks. While these commodities escape the initial haul from railroad car to market, Professor Duddy says, they do bear a handling and unloading charge which is assessed by the auction company. The handling charge per box on citrus fruits is three cents; on deciduous fruits, five cents. The unit of purchase on the auction is usually a minimum of 20 boxes, but it will vary widely above that amount.

A study of potato distribution costs

(*Turn to Page* 60)



A view of a portion of the wilt-variety test field. At left, Dixie Triumph, Cleveland 54, Rhyne's Cook —resistant varieties. At right, Trice—extremely susceptible variety. Photographed August 25, 1927.

# Wilt-Resistant Cotton Varieties

*By D. C. Neal*

Mississippi Experiment Station

FOR a number of years, experiments have been conducted jointly by the departments of Plant Pathology and Plant Breeding of the Mississippi Experiment Station with many varieties of both staple and short cottons for the purpose of obtaining information as to their resistance to wilt, a disease which is responsible for an annual loss of several thousand bales. It has been found as a result of these tests that many varieties of cotton differ materially in respect to their resistance and susceptibility to this disease. It also has been established that the use of resistant varieties and liberal fertilization of the crop with balanced fertilizers are perhaps the most feasible and economic means of controlling the disease.

The fungus which is responsible for cotton wilt is one of the soil inhabiting fungi known as *Fusarium vasinfectum*. It is able to live in the soil for prolonged periods of time, in fact for several years, thereby mak-

(*Turn to Page* 54)

# Fertilizing Peaches

*By H. P. Stuckey*

Georgia Experiment Station

IT is evident from six-year tests in Georgia that fertilizers play an important part in the yield, maturity, and keeping quality of peaches. These tests were conducted jointly by the United States Department of Agriculture and the Georgia Experiment Station at Marshallville on Greenville clay loam, a soil largely used in peach orcharding in Georgia.

Preliminary reports of this work are being made by the Georgia Experiment Station. The official bulletin containing the data will appear later.

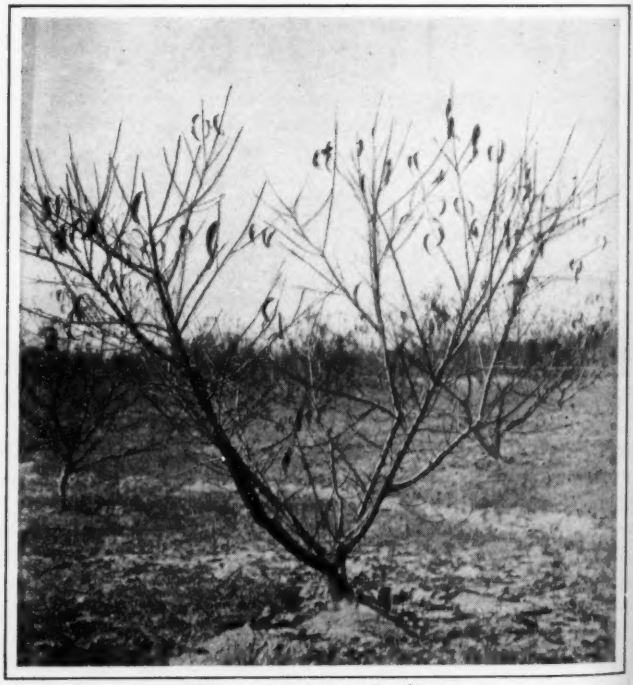
The experiments were begun in 1922. Elberta peach trees which had been set out in 1921 received a small amount of stable manure and cottonseed meal. There were 30 plots, including three checks, and there were 12 trees to a plot.

Fertilizers used in this experiment contained all three elements, phosphoric acid, ammonia, and potash, the proportions of each varying from 2 to 12 per cent. An 8-4-4 fertilizer also was used for comparing muriate and sulphate of potash.

Each fertilizer had a total of 16 per cent plant food and the 21 different analyses with the percentage of phosphoric acid, ammonia, and potash given in that order, are as follows: 12-2-2, 10-2-4, 10-4-2, 8-2-6, 8-4-4, 8-6-2, 6-2-8, 6-4-6, 6-6-4, 6-8-2, 4-2-10, 4-4-8, 4-6-6, 4-8-4, 4-10-2, 2-2-12, 2-4-10, 2-6-8, 2-8-6, 2-10-4, and 2-12-2.

The rate of fertilizer application was 3 pounds per tree when the orchard was entering its second year, 4 pounds in 1923, 7 pounds in 1924, 12 pounds in 1925, and 15 pounds in 1926.

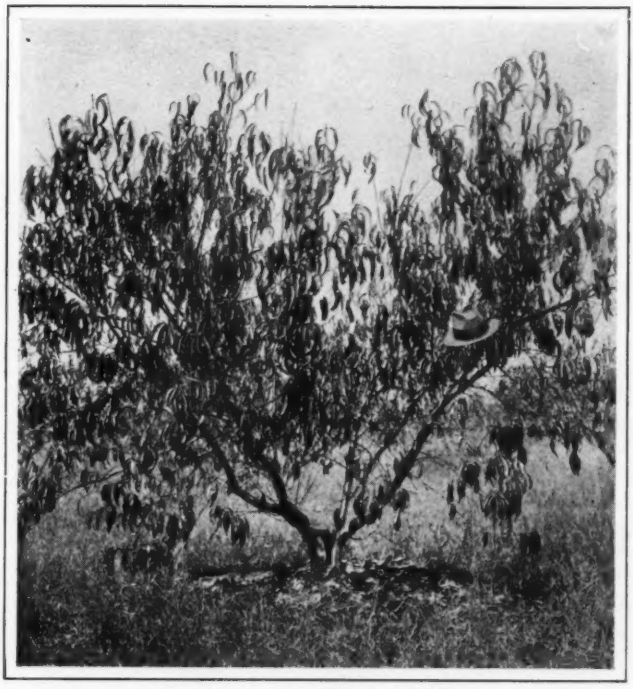
There was practically no difference in tree trunk growth, nor in height, due to the various fertilizers used.



This tree received no fertilizer.

But there was a difference between the no-fertilizer plots and those receiving fertilizers, the size and vigor of the trees being greatest on the fertilized plots.

Trees receiving a high-nitrogen fertilizer had a denser, greener foliage than those receiving less nitrogen. Trees grown with fertilizer containing six per cent of potash had a thrifty appearance, but trees getting only two per cent of potash were unhealthy and had light colored foliage.



A 2-6-8 fertilizer was applied to this tree.

The trees set some peaches in 1924, but they were not allowed to mature. Observations were made as to the number of peaches per tree, the size (whether large, medium, or small), and the degree of ripeness, July 8, 1925. In 1926 the degree of ripeness was noted on July 16.

### *Keeping and Shipping Qualities*

The two plots producing the largest yields were fertilized with 2 per cent phosphoric acid, 4 per cent ammonia, and 10 per cent potash, and with a 2-6-8 fertilizer. The first yielded an average of 539 peaches and the latter 536 peaches.

The entire data were studied by grouping fertilizers containing 8 to 12 per cent phosphoric acid, 8 to 12 per cent ammonia, and 8 to 12 per cent potash.

The high-phosphate group of fertilizers averaged 383 peaches per tree, the high-nitrogen group 347 peaches, and the high-potash group showed an average of 417 peaches.

The data shows in a general way that the size of the peaches is influenced by the number on the tree. The small-yielding plots generally bore the largest fruit. High-phosphate plots yielded more peaches of the large class, and high-nitrogen plots more peaches of the small class.

The data, arranged according to the fertilizer groups mentioned, show a very marked effect of fertilizers on the ripening of the fruit. The fruit on all the high-phosphate fertilizer plots ripened early, and those on the high-nitrogen plots late. No marked influence of potash on the ripening was apparent.

A study was made of the keeping and shipping qualities of peaches by shipping them from Marshallville to Griffin, Georgia, and Washington, D. C., in 1925 and to Griffin and New York City in 1926. Observations were made at Griffin by representatives of the Experiment Station, and

in Washington and New York City by representatives of the United States Department of Agriculture. The findings checked closely at all three places.

The data on the keeping quality of the fruit reveals that the plots showing most resistance to decay were fertilized with mixtures containing a high percentage of potash.

When studied according to the fertilizer groups, the data show that the average number of days after removal from storage before decomposition started was 1.7 for the phosphate group, 1.17 for the nitrogen group, and 2.17 for the potash group. The number of days before a complete breakdown was 4.5 for the phosphate group, 4.2 for the nitrogen group, and 8 for the potash group. The per cent of decayed fruit when the second lot was removed from storage was 66.7 for the phosphate group, 72.6 for the nitrogen group, and 43.2 for the potash group. The data, as a whole, shows clearly that potash has more influence on the keeping of peaches than phosphate and nitrogen.

### *En Route Five Days*

In the shipping test made on peaches sent to New York, the peaches were en route five days in iced cars. Inspected on arrival at destination, a marked difference was noted. The percentage of sound fruits varied from 74 to 100. Peaches from no-fertilizer plots, high-phosphate plots, and high-ammonia plots were poorest. The soundest peaches were from plots of the high-potash group.

The three fertilizer plots producing the highest percentage of sound peaches and no unmarketable peaches were the 6-4-6 fertilizer, 98.2 per cent sound; the 6-4-4 fertilizer, 98.4 per cent sound; and the 2-2-12 fertilizer 100 per cent sound.

Studied according to fertilizer groups, we have for six high-phosphate fertilizers 82.2 per cent sound and 5.05 per cent non-marketable; for six high-nitrogen fertilizers 86.7 per cent sound and 3.47 per cent non-marketable; for six high-potash plots 90.4 per cent sound and 2.51 per cent non-marketable.

Three forms of potash were used, sulphate, muriate, and kainit, in an 8-4-4 fertilizer applied at the same rate as the fertilizers mentioned.

The data given in connection with the fertilizer ratio experiment shows that high-potash mixtures are essential for the best results and, if a fertilizer analysis with a higher ratio of potash than four per cent had been used, different results would probably have been secured.

### *Fertilize With Care*

There was no marked difference in the effect of sulphate and muriate of potash on the yield. The kainit produced less peaches than sulphate or muriate. No definite conclusion can be drawn from the effect of the shipping and keeping quality of the peaches grown by the different forms of potash, under the conditions of this experiment.

In selecting fertilizers for peach orchards on this soil, consideration should be given to each of the factors, tree growth, fruit production, time of ripening of fruit, and its keeping and shipping quality.

While the data shows that the peach trees show little response to a direct application of phosphoric acid, its use in relatively large proportions in a fertilizer mixture for peaches is no doubt justified for the beneficial effect it exerts on leguminous cover crops grown in the orchard.

A mixture containing 7 to 8 per cent phosphoric acid, about 4 per cent ammonia, and 7 to 8 per cent potash should meet the requirements of peach production on this soil. In the Piedmont region where the soils are known to run comparatively high in potash a lower percentage of this element may be used.

Bird's-eye view of the North Dakota agricultural campus and buildings with the experimental plots in the distance.

# NORTH DAKOTA

## *Experiment Station*

*By T. Worden Johnson*

North Dakota Agricultural Experiment Station

"JUST suppose that the new varieties of wheat produced here at the North Dakota Agricultural Experiment Station only increased the production two bushels per acre in North Dakota," said one of the station workers recently. "The profits to North Dakota farmers would be in the neighborhood of 20,000,000 bushels for the season," he added.

That such an estimate in increased production, due to the development of new varieties of wheat, is conservative, is pointed out by men who have followed the work closely. In some instances the increased produc-

H. L. Walster, Dean of the School of Agriculture, North Dakota Agricultural College.

tion for new varieties of wheat over the old-time varieties has been several bushels per acre.

If spotlights of inquiry were to be turned on the work which is performed at the North Dakota Experiment Station a surprise would await the onlooker. Down through the 37 years of progress have toiled industrious scientists who have left an untold wealth to the 75,000 farmers of the state in the form of checks and cures for plant and animal diseases, new varieties of cereals, new wilt-resistant flax, a Dakold (winter hardy rye), 21-21 barley, Earliana and Red River tomatoes, the Sunshine sweetcorn, and a score of other new varieties of cereals and farm and garden crops.

In the heart of the Red River valley lies the main North Dakota Experiment Station. What was once the great Lake Agassiz now is a fertile valley pierced by the Red River of the North which flows northward and serves as a boundary between North Dakota and Minnesota. The main experiment station or the Fargo station lies on the north outskirts of the city of Fargo. It contains 960 acres of land which also include several acres of the North Dakota agricultural college campus. Five branch stations of 160 acres each and one leased 160-acre farm comprise the remainder of the experimental fields of the North Dakota Experiment Station.

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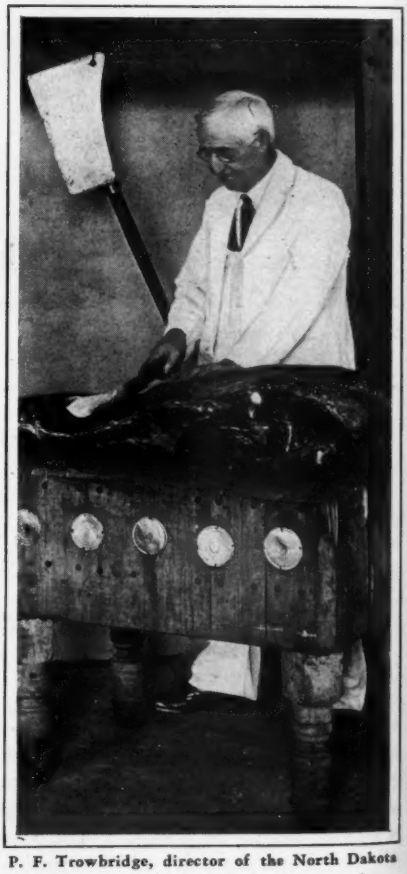


P. F. Trowbridge, director of the North Dakota Experiment Station, giving a demonstration.

# Potato Experiments Show Potash Need

*By F. C. Deitz*

State Institute of Applied Agriculture, Farmingdale, Long Island

THERE are two methods of increasing the profit to the farmer from a given crop. First, to decrease the cost of producing an acre of crop through better management and more economical methods; and second, to increase the yield without increasing the cost of production proportionately. The farmers of today have gone a long way toward economical methods of production, and no very striking improvements in this direction can be looked for in the immediate future. The possibility, however, of increasing yields without an increase in production costs has not yet been explored to its limit. Several avenues of approach are open for increasing yields. Prominent among these are better seed, better strains, better control of insects and diseases, and a more intelligent use of plant food.

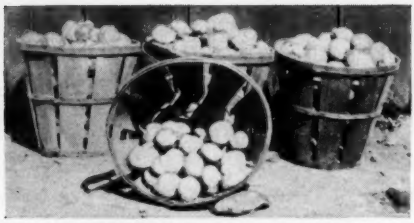
For the past two years the writer has been carrying on an experiment at Farmingdale, Long Island, to throw some light on the question of increasing the yield of potatoes through the use of plant food and particularly one plant food, potash. It is found by observation that there is a wide variation in practice among potato growers as to the amount of potash used even on similar soils. Of course, the type of soil and its natural available potash must be considered. It is entirely possible that many potato growers are not using enough potash, and it may be found that others are using too much under their particular soil conditions. In either case a proper adjustment will increase the profit on an acre of potatoes.

In order to get some definite data on the possibility of increasing the yield of potatoes with potash, the experiment outlined below was planned and carried out in the summers of 1926 and 1927 on the same plots. Since one aspect of this work concerns the residual effect of fertilizer on soil where continuous cropping is practiced, the experiment will be continued during the season of 1928. On Long Island continuous cropping with potatoes is practiced to a considerable extent, therefore, the residual effect of fertilizer is important. If it can be determined for any given soil type, it should lead to a more intelligent and efficient use of fertilizer. It is unlikely that the same kind and amount of fertilizers will be needed year after year with continuous cropping.

### *On a Typical Soil*

The soil on which this experiment is being conducted is a sassafras gravelly loam, typical of much of the potato soil on parts of Long Island. Previous to this experiment general farm crops had been raised on this land, the rotation including hay, corn and grain. None of these crops had received heavy applications of fertilizer. The soil was acid in nature. Upon such soil it was believed that potatoes should respond to the application of fertilizer.

In the spring of 1926, stable manure was applied to the field at the rate of



5-10-10 fertilizer—149.3 bu. yield.

10 tons per acre. The field was plowed in March and fitted thoroughly. It was then laid out in nine plots, 200 feet long, and wide enough to plant 10 rows of potatoes in each plot. The following diagram shows the arrangement of the plots:

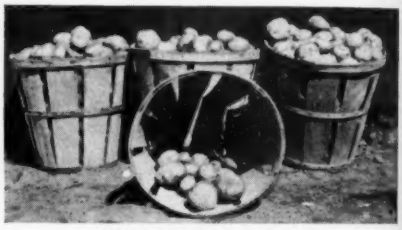
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Check | 5-10-0 | 5-10-5 | 5-10-10 | Check |
| 6 | 7 | 8 | 9 | |
| 5-10-0 | 5-10-5 | 5-10-10 | Check | |

Since this work was directed to a study of potash and its effect on the yield of potatoes, potash was the only variable fertilizer in the experiment. Nitrogen and phosphorus were applied in equal amounts to all plots except the check plots. The amount of fertilizer applied to each plot was at the rate of 2,000 lbs. per acre and the foregoing diagram gives the analysis used on each plot. In mixing the fertilizer for the plots, the nitrogen and phosphorus carriers were mixed first, using the following formula on a ton basis:

100 lbs. nitrate of soda
150 lbs. ammonium sulfate
100 lbs. dried blood
300 lbs. tankage
1,160 lbs. 16% acid phosphate

Where potash was used, it was obtained from high grade sulfate of potash and muriate of potash; the amount varying from nothing to 200 lbs. and 400 lbs. in the 5-10-0, 5-10-5, and 5-10-10 fertilizers respectively. (The muriate plots were added in 1927 in a 5-10-10 analysis.) Great care was taken to see that each plot received the same amount of nitrogen and phosphorus. The seed used was certified Green Mountain, and the plots were planted about April 15 in 1926 and 1927. Cultivation and spraying were done each year throughout the growing season in accordance with the best Long Island practice.

Considerable difference between the check (no fertilizer) plots and those receiving fertilizer was observed during the growing season. The check plots were less vigorous, had much smaller vines, and the foliage was of a lighter color. This difference was more pronounced during the summer of 1927, the second year of the experiment; the plots receiving potash



5-10-5 fertilizer—139.1 bu. yield.

were the most vigorous, though there was little noticeable difference between the 5-10-5 and 5-10-10 plots.

Each year of the experiment the potatoes were harvested during September. After careful grading and examination of the tubers for diseases, the yields of the several plots were graded into a No. 1 grade and culls. The average yield of plots receiving the same fertilizer treatment is given in the table for the seasons of 1926 and 1927.

### *A Valuable Factor*

Looking at the yields for 1926, it will be apparent that potash was a valuable factor in producing a better crop of potatoes. The increase in yields of marketable potatoes with the use of a 5-10-5 fertilizer as against the 5-10-0 was 39 bushels per acre. With 10 per cent potash (sulfate form) the yield of No. I potatoes was 67 bushels more than the 5-10-5 yield and 106 bushels more than the 5-10-0 yield. In 1927 there is a reduction of 46 bushels in the yield of the check plots, and a reduc-

| *Fertilizer Treatment* | *Yield per Acre in Bushels* 1926 No. 1 | 1926 Culls | 1927 No. 1 | 1927 Culls |
|---|---|---|---|---|
| Checks | 147 | 22 | 101 | 20 |
| Fertilizer 5-10-0 | 152 | 40 | 108 | 22 |
| " 5-10-5-S | 191 | 30 | 253 | 23 |
| " 5-10-10-S | 258 | 14 | 264 | 18 |
| " 5-10-10-M | ... | .. | 251 | 24 |

tion of 44 bushels in the yield of the plots receiving nitrogen and phosphorus but no potash, as compared with the 1926 yield. This illustrates the danger of continuous cropping with potatoes where no fertilizer is used, or where one element as potash is omitted. The reduction in the 5-10-0 plots is undoubtedly due to potash hunger. The 1926 crop was able to get some potash from the soil of both the check and 5-10-10 plots, but the second crop suffered from a depleted potash supply. In the case of the no-fertilizer plots, the low yield is due to a deficiency of all three food elements.

Turning now to the 1927 yields of marketable potatoes on the plots receiving potash, we find an increase of 62 bushels per acre over the 1926 5-10-5 yield, and a decrease for the

5-10-0 fertilizer—117.4 bu. yield.

5-10-0 plot of 44 bushels in 1927. In the enormous increase of the second crop on the 5-10-5 plot, there is evidence of the residual effect of potash from the previous year's fertilizer application. The smaller increase in the 10 per cent potash yield the second year may indicate that the use of 10 per cent potash under a system of continuous cropping is not economical. However, the 1926 result with 10 per cent potash shows convincingly that this amount of potash is necessary and very important in the production of a high yield of potatoes on land which has not been heavily fertilized for previous crops. The exact per cent of potash, most economical for a system of continuous cropping with potatoes, is yet to be determined. More data on this point will be secured before this experiment is completed.

### *Similar Experiments*

Owing to the fact that muriate of potash is extensively used in potato fertilizers and farmers as well as experts do not agree as to which is the better form of potash, muriate or sulfate, two muriate plots were added to the test in 1927. The analyses compared were 5-10-10 potash from muriate and 5-10-10 potash from sulfate. There was a difference in yield of 13 bushels per acre in favor of the sulfate form. As the muriate plots were not started until 1927, the slight difference in yield has little significance. It is hoped that the 1928 results will shed more light on this feature of the experiment.

The writer has data obtained in two similar experiments, one conducted at Hicksville, Long Island, and the other at Cranbury, New Jersey. In both of these experiments, muriate was compared with sulfate in a 5-10-10 analysis. The New Jersey experiment

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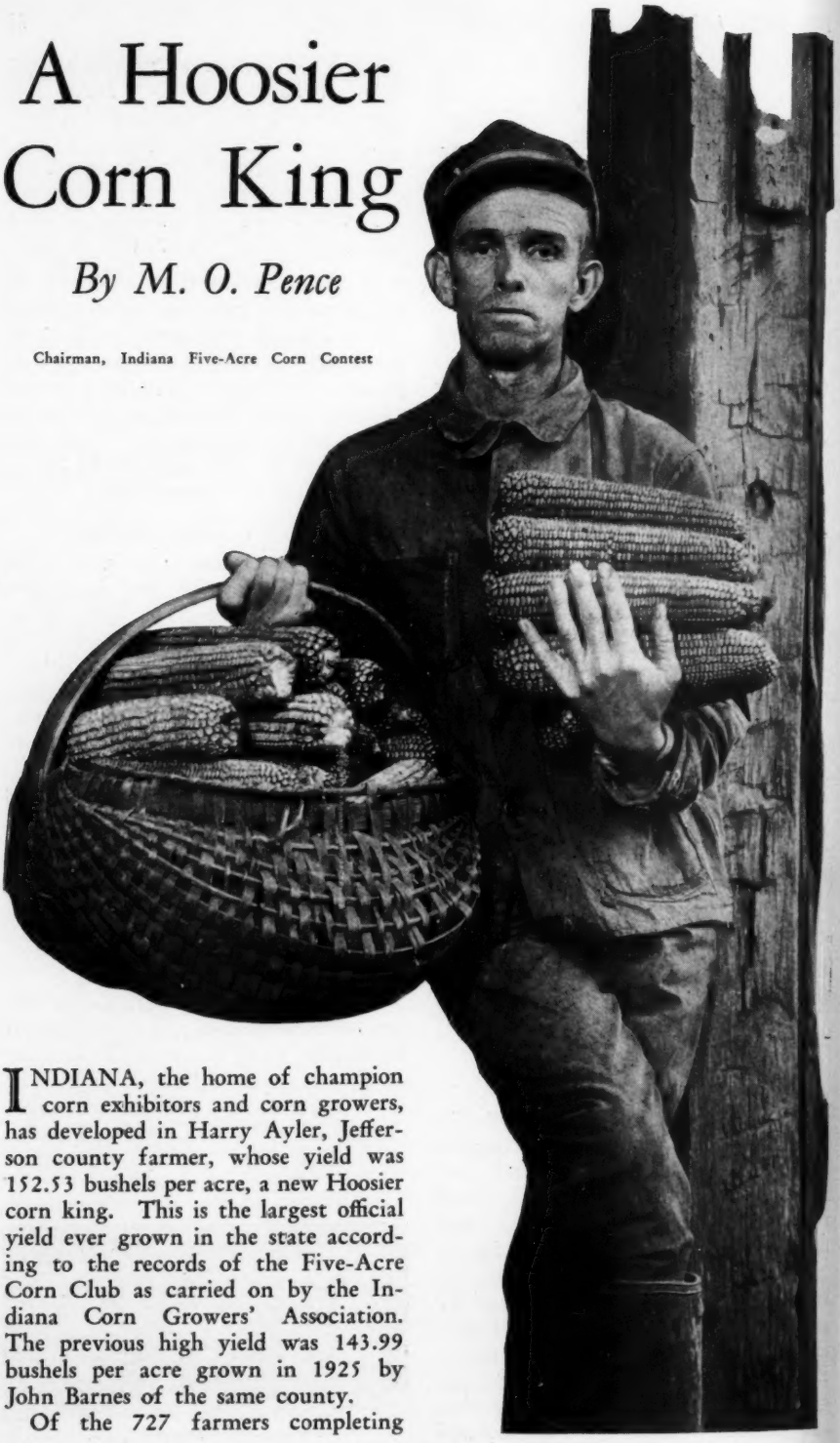
No fertilizer—98.6 bu. yield.

# A Hoosier Corn King

*By M. O. Pence*

Chairman, Indiana Five-Acre Corn Contest



INDIANA, the home of champion corn exhibitors and corn growers, has developed in Harry Ayler, Jefferson county farmer, whose yield was 152.53 bushels per acre, a new Hoosier corn king. This is the largest official yield ever grown in the state according to the records of the Five-Acre Corn Club as carried on by the Indiana Corn Growers' Association. The previous high yield was 143.99 bushels per acre grown in 1925 by John Barnes of the same county.

Of the 727 farmers completing

their work in the Five-Acre Corn Club this year, 66 grew 100 bushels or more per acre, 146 grew from 85 to 100 bushels, and 147 grew from 75 to 85 bushels per acre, or an average of 75 bushels per acre for all contestants. How did they produce such large yields in a year considered so unfavorable for corn growing? The methods and practices used by these Indiana corn champions in producing large yields should be of interest to others interested in the subject.

The writer made a special trip to the farm of Indiana's new champion, Harry Ayler, to see his corn and study his methods first-hand. His farm is located along one of the small streams that flows into the Ohio, in a narrow valley. His farm of 135 acres has 45 acres in the valley on which he grows corn, alfalfa, and tobacco and 90 acres on the ridge which is in pasture and woodland. His five-acre plot, part of a field of 11 acres, lies in the bottom, but is rarely overflowed.

Mr. Ayler's large yield is not the result of plans made or work done in a single season. He started preparation for his crop in 1925 when the field was in clover. To this sod he applied 20 loads of barnyard manure which was plowed under for tobacco. He also used 500 pounds of a 3-8-6 fertilizer broadcast for the tobacco crop. The tobacco crop was almost a failure and most of it was plowed under in the fall of 1926.

The land was plowed again in the spring of 1927 about 8 inches deep, disked three times with a single disk, and rolled and dragged three times. Fertilizer of an 0-12-6 analysis was broadcast at the rate of 250 pounds per acre, after which the land was harrowed ahead of the planter. The corn was drilled 8 inches apart in rows 2 feet 10 inches apart. By means of closer planting combined with other good practices, Jefferson county farmers have been able to boost their yields to the present high levels.

Three cultivations were given the corn with a two-horse, one-row cultivator and one cultivation with a

(*Turn to Page* 53)

J. A. Demaree, Jefferson county, Indiana farmer, produced 138.21 bushels per acre.

# The Demonstration Idea In Agricultural Extension Work

*By J. William Firor*

Former Georgia County Agent

"SEEING this field of crimson clover and hearing what the county agent and Mr. Holmes had to tell about it have completely convinced me that I should have been growing it for years," said a Clarke county farmer to me at a recent field meeting. This meeting of farmers was held on the farm of Roy T. Holmes under the supervision of County Agent L. S. Watson. The crimson clover demonstration had been going on for five years.

Soils in the county had been cotton-farmed to the exhaustion of their humus supply. This is true of the farm of the farmer who made the remarks given above as well as many other farms in this district.

Right at these farmers' very doors had been for five years a practical illustration of a way to keep up the humus content without interfering with money crops. It took a well advertised field meeting with preliminary work through the local paper and at various community meetings to get the idea across to a group of farmers. However, it was the successful demonstration that did get the idea across.

During the last few years, agricultural extension workers have begun to appreciate the power of follow-up work in connection with the result and method demonstrations. The well planned follow-up to a sound demonstration of some needed practice very often has succeeded beyond the expectations of the extension worker.

When I was in the county agent work, I was startled by some follow-up work done in connection with seven orchard demonstrations. The follow-up consisted of three field meetings, several articles in the local paper, a few talks at indoor meetings, some personal contact work, and finally a carefully prepared circular letter sent to 1,000 people. I kept as accurate a record on this effort as it is possible for a county agent to get and found that in one season 200 farmers adopted the practices advocated.

The results were so striking and outstanding that I almost came to the conclusion that I could sit in my office and write articles for the paper and circular letters, and readily revolutionize the farm practices of the county. But it cannot be done that way. It is well that it is not so easy. Changes on the farm should not be made too quickly. In fact in most instances improvement of present practices is better than changes to new ones.

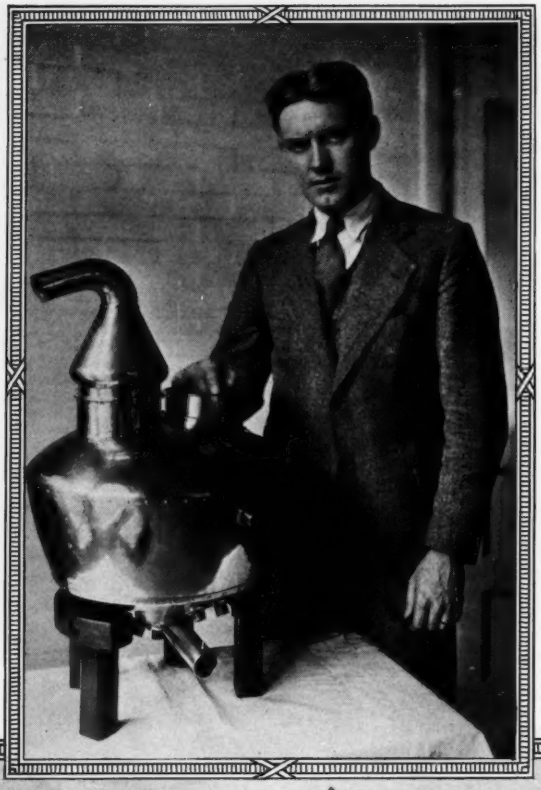
My purpose in writing this is to plead a cause. It is to sound a warning, if it is needed.

I narrowly escaped the temptation of substituting the manifestations of the real thing for the real thing itself. The results obtained from follow-up methods were so productive of numbers that I was sorely tempted to let down on the result demonstrations and try to use the modern salesmanship methods in place of them.

Without a well planned, successfully carried out result demonstration of some practice that is really needed, it is practically impossible to put across follow-up stuff successfully. A little experience will probably illustrate what I am driving toward. Several years ago, I was trying to demonstrate the preparing of land in the fall for cotton seeding the next spring. Farm-

(*Turn to Page* 53)

# Pictorial

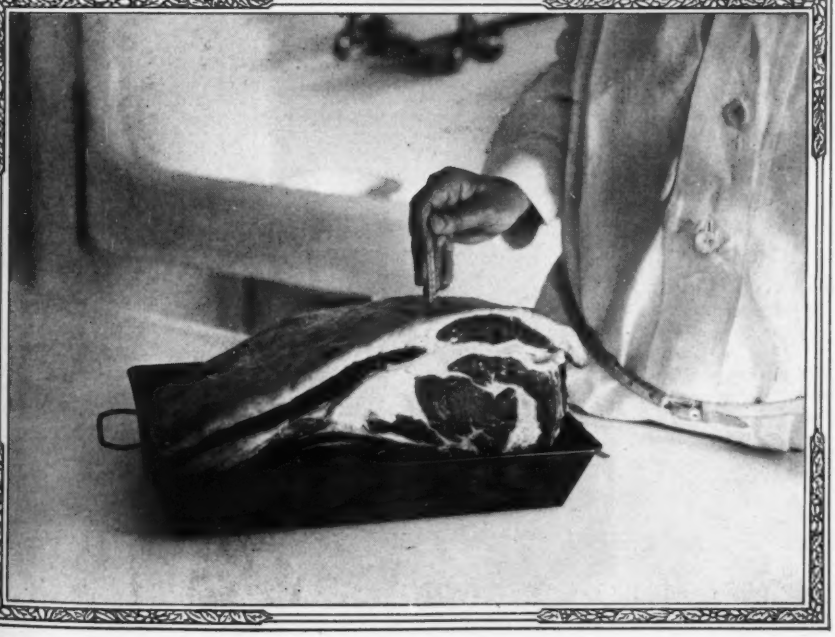


J. O. Reed, an engineer of the Bureau of Chemistry and Soils, U. S. D. A., with the model of a new-type turpentine and rosin still which he designed. The new apparatus uses steam instead of the direct heat of the fire and is being adopted by the naval stores industry.

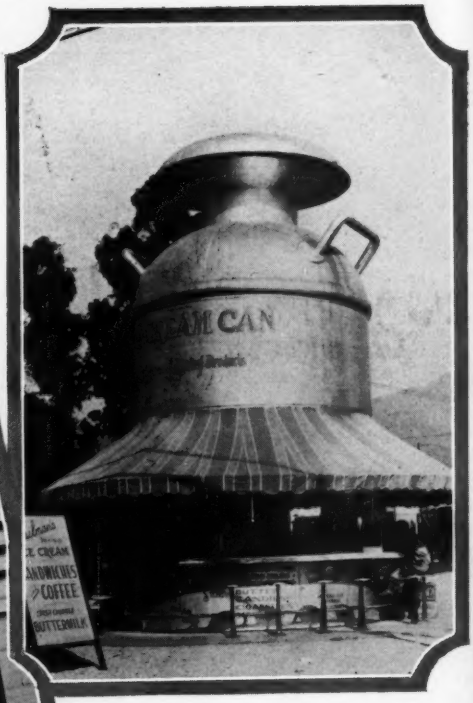
BELOW: A good crop of cotton on the farm of W. H. Sudduth, Starkville, Miss. More than 200 bales already had been picked from 150 acres when this picture was taken.

RIGHT: Not "Tea for Two" because this little orphan lamb is getting cow's milk from the old teapot.

BELOW: The great advantage claimed for the new meat thermometer is that the housewife can get the same conditions in a roast time after time. By looking at the thermometer occasionally it is possible to cook the meat rare, medium, or well done, whichever is desired.



RIGHT: Freak food factories are being employed by California restaurateurs to attract trade. This proprietor is using the cream can idea.



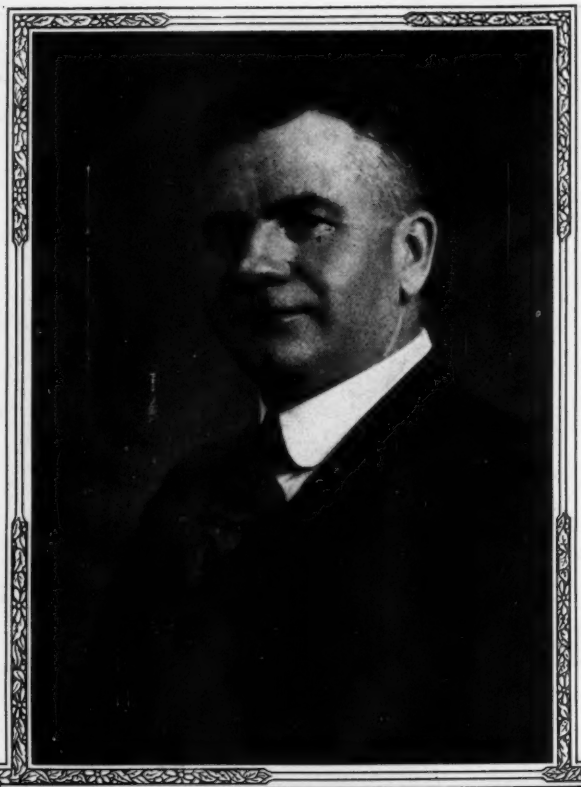
LEFT: "Oscar" is well known over the radio. His defiant crow is part of the Farmer's-Hour programs broadcast from the Oklahoma A. and M. College.

RIGHT: Ned B. Thorne, Hoosier farmer, uses his radio to keep in touch with hog markets, as well as for entertainment. Radios are keeping farmers in close touch with the latest developments of the day.

LEFT: There wouldn't be so much chicken thieving if more farms had eyes and ears like these to detect strange night sounds and movements.

RIGHT: The water fountain of the desert. The water of this barrel cactus has saved the lives of many parched gold seekers.

LEFT: "Boosting feed." Incidentally, how many sheepmen are there who have not had similar gentle reminders of an old ram's affection?



LEFT: John A. Kiernan, for many years head of the tuberculosis eradication division of the Bureau of Animal Industry, U. S. D. A., who died recently in Washington.

BELOW: John T. Caine III, who for a number of years has been in charge of the administration of the Packers and Stockyards Act, has left the Department of Agriculture to take a position with the International Livestock Exposition at Chicago.

# The Editors Talk

## Fertilizer Analyses

Among other things that the fertilizer industry is afflicted with are hundreds of different analyses or grades as they are often called. Some time ago a survey was made by the National Fertilizer Association based on the individual reports of manufacturers. The tonnage surveyed represented approximately 3,500,000 tons, or a little less than one-half the total tonnage sold.

This tonnage represented 709 analyses. Note the following figures:

> The first five best selling analyses represented 50 per cent of this tonnage, the first ten, 60 per cent; the first fifteen, 67 per cent; the first twenty, a little over 71 per cent; the first twenty-five approximately 75 per cent of the above tonnage.

This means that the remaining tonnage was divided between some 684 different analyses. More than this, of the last 535 grades or analyses less than 1,000 tons each were sold. These 535 grades were only 3.24 per cent of the total.

But much progress has been made during the last five years in the standardization and simplification of these grades, for which, a great deal of credit is due to the manufacturers and agronomists who have cooperated in this work. But in spite of this, there are still far too many grades.

It is very encouraging, therefore, to record that three very successful meetings between representatives of the fertilizer industry and agronomists of the experiment stations have been held recently with the object of modifying the analyses or grades agreed upon at the first meeting about five years ago, and to consider steps for further standardization.

These meetings were held in Philadelphia representing the Middle-Atlantic states, Chicago for the Mid-western states, and Boston for the New England states.

In order to further simplify the matter of recommended grades, the idea of emphasizing the ratio of three plant foods has been suggested, that is, instead of agreeing only on any specific

analyses as say the 4-6-10 or 2-12-6, the ratio of nitrogen, phosphoric acid, and potash would be emphasized. It is suggested that this ratio be expressed in its simplest terms as a 2.3.5, 1.6.3 or any other ratio. Having agreed on the ratios, the manufacturer could put out any multiple of such ratio he finds desirable, though the agronomists and industry at these meetings have agreed on the lowest multiple of such ratios that should be recommended. Thus, by using the ratios as a basis of agreement when double strength and triple strength fertilizers are sold on the market, a smaller list is necessary, than were the analyses only agreed upon.

One of the purposes of the conferences was to decide on the smallest number of such ratios that would cover the largest field of fertilizer needs. For this purpose by the use of a properly constructed triangle, it is possible to properly distribute such ratios. While there may be certain apparent objections to the use of the triangle for this purpose, there is little doubt that when it is properly understood, it will be found to be the best means for obtaining the smallest number of ratios to cover the largest field of fertilizer need. It will also provide a very much needed basis for unity and correlation in experimental work over the fertilizer territory as a whole.

These three meetings have made marked progress in many ways. The fertilizer industry and the agronomists of the experiment stations are to be congratulated on the excellent spirit shown on both sides in an effort to solve the problems of a basic industry.

## Candidature

What real social progress is the world making? Looking back to many years ago, a man wrote a letter to a friend, referring to his candidature for public office.

He said among other things—

"In the general opinion this premature canvas of his is not unfavorable to my interests, for the voters generally give as their reason for their refusal that they are under obligation to me. So I hope my prospects are, to a certain degree, improved by the report getting about that my friends are found to be numerous.

. . . . . .

Of the candidates for this year's election . . . . . .
. . . . . is considered certain . . . . . .
. . . . . Such in outline is the position of affairs in regard to candidates up to date. For myself, I shall take the greatest pains to carry out all the duties of a candidate . . . . . As

soon as business has come to a standstill, I shall obtain a libera legatio and make an excursion in the month of September."

The above might have been written last month, but Cicero wrote it to Atticus at Athens. Since then many far-reaching changes in the social structure of the world have occurred. Christianity has appeared on the earth; civilization has gone through a few centuries of the so-called dark ages. There has been a Renaissance of learning and of morals; printing inventions and science have changed the face of things.

But looking back, it was an age in many respects somewhat similar to the present.

What is real progress?

At times in the history of the world, men have found it very necessary to define clearly what they mean by such words as education, democracy, liberty, and many other far-reaching and fundamental words. At present, to decide just what should be meant by progress, would certainly do no harm and in most groups and circles of our national life would probably do some good.

## The Weather

Have you read or been told that 1928 is going to be the hottest and driest year since 1867? Or that frost in late summer will cut Upper Mississippi Valley crop yields 60 per cent? Or that torrential rains will sweep New England, delaying all planting?

Well don't believe it!

A statement just issued by C. F. Marvin, Chief of the Weather Bureau of the United States Department of Agriculture, stamps as thoroughly unreliable any attempt at long range forecasting. Professor Marvin declares that the possibilities of such long range forecasting have been studied by the Weather Bureau and other scientific agencies for a long time. To date, no practicable methods have been devised, and so-called forecasts of this character are no better than mere guesses.

In his statement he says that throughout the past 400 years there has seldom been a time when one or more long range weather forecasters have not sought to interest the public in their sensational claims. He cites as typical a forecast for the years 1926 and 1927, which declared that on account of extremely abnormal weather the years would be disastrous ones for mankind. At best, Europe would have a harvest not better than 40 per cent in 1927, and America, not better than 60 per cent.

Professor Marvin not only goes over the weather for 1927 showing up the fallacies in the forecast, but points out that in this country the latest official report shows the composite yield of 24 principal crops to be about seven per cent above the 10-year average, and the yield of the seven principal feed and food crops of the world was more than five per cent above the average for recent years.

The federal meteorologists welcome every honest, new idea on forecasting, but are not willing to allow the public to be duped and misled by various sensational claims. The public may rest assured that long range weather forecasting will be employed by the Weather Bureau of the United States Department of Agriculture just as soon as such forecasting can be put on a scientific basis rather than a foundation of mere guess work.

## Potash Day

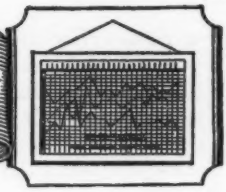
On the invitation of the Deutsches Kalisyndikat, well-known authorities on soils and fertilizers assembled on January 30 in the former Prussian Herrenhaus (House of Representatives), Berlin, to discuss soils and fertilizer problems. It was known as "Potash Day".

Among the speakers were Dr. E. H. Gerhard Korte who discussed the potash industry and Professor Dr. Binz-Berlin who also spoke on potash. Long-time experimental work was discussed particularly by Geh. Hofrat Prof. Dr. Paul Wagner, Darmstadt, who gave an address on 50 years of fertilizer instruction. Sir John Russell, Rothamsted, England, spoke on 85 years of experimental work.

Holland was represented by Professor Dr. Aberson, who referred to the application of artificial fertilizers in Holland in the light of recent observations on soil diseases. Professor Dr. Newbauer, Dresden, outlined intensive fertilization on a rational basis. Professor Dr. Kappen, Bonn-Poppelsdorf, discussed the reaction of the soil.

This meeting shows how people of different countries are brought together on the basis of mutual and common problems. As potash and other chemicals become more important in the world's crop production, happily so will it be necessary for the scientists of different countries to meet together and so contribute not only to the solution of their own problems, but to a better international understanding.

# AGRICULTURAL DEVELOPMENTS



*By P. M. Farmer*

## THREE TIMES CORN CHAMPION

For the third year in succession Ira C. Marshall of Hardin county, Ohio, has been the world's champion corn grower. This last fall he made 157.77 bushels to the acre on a ten-acre field and in the two previous years he won with the yields of 168.66 and 160.01 bushels. These yields are all corrected to the 20 per cent moisture basis. The soil on which the 1927 corn crop was grown is black, almost a muck, and it is tile-drained. For the last two years the land was in alfalfa. The field averaged 3½ stalks to each hill; rows were 34 inches apart and hills 33 inches apart in the rows. The ears were not very large, averaging 8 ounces each, but the high yield was made because of the large number of ears.

## COLD POTATOES

How cold must a potato be before it freezes? This question is answered by the U. S. Department of Agriculture after an exhaustive study of potato injury from low temperatures. The freezing point varies from a little below to a little above 29° F., the differences being attributed to individual peculiarities in potatoes and also differences in variety, soil conditions, seasons, methods of storage, and time of year. Occasionally "undercooling" may occur, a phenomenon in which the potato may reach a temperature of a degree below its usual freezing point without injury to the tuber since ice is not formed. An undercooled potato is about as subject to dangerous change as some high explosives, for a slight jar will cause crystalization or freezing in as little time as a half minute. Some potatoes in a bin may freeze and by their very freezing protect near-by potatoes. This phenomenon is explained by the fact that the crystalization of water results in the giving off of heat. More susceptible potatoes may freeze and in that process bring the neighboring potatoes to a point above freezing. Potatoes in barrels or sacks are said to be more subject to freezing than those in a bin because it is easier for cold air to circulate around them. Potatoes that are very cold, that is at or below 29° F., should be warmed if possible before being moved. It has been found that potatoes stored for some time at a temperature around 32° gradually have their freezing point lowered, whereas potatoes stored at a higher temperature do not. The cause of this, the scientists say, is the greater concentration of sugar found in potatoes stored at lower temperatures. Sometimes the difference from this cause is as much as a full degree or even more.

## POTASH HELPS ON ALKALI LAND

On a farm in Howard county, Indiana, last season the value of potash fertilizers on alkali soils was emphatically demonstrated. The owner of the farm broadcast 200 pounds of 0-8-25 fertilizer per acre on alkali soil where it had been impossible to get a crop of corn. In addition to the 0-8-25 fertilizer he used 75 pounds of 2-12-8 in the row on all

the field. The alkali soil which received the additional potash fertilizer yielded 88 per cent more corn than the check part of the field receiving only the 2-12-8. The corn on the potash fertilized land made a larger growth, was a darker green color, and stood straighter.

## NEW USE FOR CORN HUSKS

The county agent of Summit county, Ohio, reports that corn growers in at least one section of the state may make an extra profit of $15 to $17 an acre as a result of selling corn husks. Rubber manufacturers used the husks in polishing articles of hard rubber, the husks being made into buffing wheels which, used with pumice stone and water, give a very desirable finish. Husks for this market must be removed from the shanks and tied in bundles of convenient size. It is estimated that rubber companies pay about $120 a ton for the bundled husks. Farmers in a number of counties in Ohio are supplying several carloads of husks to rubber manufacturers this winter.

## SOUTH GETS CHEESE PLANTS

There is no better indication of the growth of the dairy industry in the South than the recent establishment of cheese factories in Alabama and Mississippi. One large company, well known in the North, has established headquarters at Selma, Alabama, and another large company has selected Columbus, Miss. These companies will operate small cheese plants in these states and other states in the South.

## NEW GRAPE WINS MEDAL

The Sheridan grape, a new black variety, similar to the Concord, and developed by the New York State Agricultural Experiment Station, has been awarded the Wilder silver medal given by the American Pomological Society for most meritorious new fruit. The new variety is said to have qualities which may make it a successful competitor of the Concord. The Wilder medals were made possible by a trust fund established by the late Marshall P. Wilder, noted Massachusetts horticulturist. At the same time the silver medal was awarded for the Sheridan grape, the same station was awarded a Wilder bronze medal for a red raspberry called the June, and honorable mention was given to three varieties of apples. The Sheridan grape is said to have a sweeter and richer flavor than the Concord, ripens a week later, and does not shell so readily.

## THIS CALF DISEASE, A FAMILY FAULT

A peculiar disease of Holstein calves, marked by pronounced skin defects, has been found by Dr. F. B. Hadley, veterinarian at the Wisconsin College of Agriculture, to be inherited. He found that in all cases victims of this disease resulted from the mating of cattle carrying two particular blood lines. One of these lines always traced to the bull, Sarcastic Lad, and the other to members of the Johanna family. When animals of these lines were mated about one out of every four calves exhibited the peculiar skin deficiency. The ratio is according to the well-known Mendelian law. This skin disease is characterized by an absence of hair on the legs and an almost complete absence of mucous membrane in the nostrils and mouth. Breeders can avoid the trouble by not mating animals of these particular families.

## SIX LITTERS—SEVEN TONS

A world's record in growing ton litters of pigs was made during the past year by O. B. Savage, a vocational school student of Columbia county, Pennsylvania. He grew six ton litters, the largest number ever produced by an individual in a single year. The six litters weighed nearly seven tons.

# Let Nature Provide

*By J. J. DeValois*

Katpadi, N. Arcot, South India

"GOD takes care of drunken men and little children," runs the old saying. The writer, after having spent six years in South India as an agricultural missionary, would like to add "and the cattle of India."

During the rainy season from June to January, nature provides an abundance of feed. At this time the cattle of India become sleek and fat. The dry season follows from January to June when nature does not provide so generously. The Indian farmer has not stored up a feed supply. Consequently, the cattle lose their sleek fat coats and become thinner and weaker as the hot, dry season progresses.

The American farmer is busy the entire summer storing up a food supply for the cold winter he knows is coming. The barn must be full of hay; the silo filled to the top with well trampled silage; the corn-crib and granary filled to overflowing with corn and other grains. Even the farmer's wife catches the spirit—or at least she used to—and fills jars, row upon row, with canned vegetables and fruits, jellies and jams, preserves and pickles.

The Indian farmer knows nothing about all this anxiety. India has no winter. Vegetation is never killed by frost. There is never a season when green growing crops cannot be seen. If water is available for irrigation, crops will grow and grow luxuriantly 12 months in the year. Why, therefore, be concerned about storing up food for the future? This seems to be the attitude of the Indian farmer.

The people in India, living on the other side of the world, live and work very differently than we do. While we sleep in America, the Indian farmer broils under the tropical sun. While he sleeps, we work unless a night shift causes our world to go topsy-turvy. So too with agriculture. When we sow, India harvests, and when India harvests, the American farmer begins to tune up his farm implements for spring work.

The rainfall in South India is about 30 inches, practically the same as it is in America's great corn belt. Instead of being distributed more or

less equally every month as in the corn belt, it all comes in two rainy seasons in South India. These periods of heavy rains are called monsoons. The first and smallest one occurs the latter part of June. It comes from the southeast. This marks the time when the rain-fed crops are sown. Occasional showers may occur more or less frequently until the last week in October when the big monsoon is driven in from the northeast by the trade winds. When it rains, it pours. The writer has seen it rain so hard that motor cars were stalled in the streets of Madras. The carburetors were flooded with water which was running three or four feet deep in the streets.

This monsoon period lasts about three weeks. Dark, cloudy, misty weather alternates with the downpours. The sun will not be seen during the entire period. Everything becomes damp and water-logged. Our shoes grow a light green mold in the dressing-room overnight.

At this time of the year all vegetation grows luxuriantly. The days are hot and sultry which, combined with abundant moisture, brings out a wealth of tropical vegetation. The cattle grazing on the hills become sleek and fat. They prosper while nature cares for them. The farmers do not provide pasture for their stock. There is no need with nature so generous during the rainy season.

But the rains cease by the first of January and for five months the hot tropical sun burns down on man and beast alike. Not a drop of rain falls, while the shade temperature mounts to 100° F. to 115° F. daily. One day I placed my thermometer in the sun to see what would happen. In a short time it registered 166° F. Needless to say the sun was pretty hot and what little breeze there was struck me in the face like a blast from a red-hot oven.

The vegetation in the non-irrigated places becomes dry and parched. The

(*Turn to Page 55*)

**The Indian farmer provides a very simple shelter for his cattle.**

# REVIEWS

**This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Soils, Fertilizers, Economics, Crops, Crop Diseases, and Insects. A file of this department of BETTER CROPS WITH PLANT FOOD would provide a complete index covering all publications from these sources on the particular subjects named.**

## Fertilizers

"Under certain conditions a large fraction of the soil's total nitrogen can be lost through microbiological processes active in both cropped and uncropped soils. Under another set of conditions, nitrogen apparently may be gained from the air by a soil through the intervention of still other groups of micro-organisms."

These are important statements in an address by Professor D. R. Hoagland made before the annual meeting of the California Fertilizer Association in October, 1927, and published in the Monthly Bulletin of the Department of Agriculture, State of California. He presented a very clear and interesting summary of the investigations on soils and fertilizers being carried out by more than a dozen investigators at Berkeley, Riverside, and Davis, in California.

It is especially gratifying that the author pointed out two things as requisites for all efficient work. First, the necessity of viewing the soil-plant system as a whole; secondly, a very essential point, the author does not consider it wise to devote exclusive attention to immediate problems. One system may be very desirable over a period of a few years, but ultimately, the consequences may be unfortunate. We are glad to see this point emphasized.

The chief phenomenon being investigated is what is technically called "the exchange of bases." It can be illustrated very simply by the process of softening hard water. Certain substances remove the lime and magnesia from hard water and leave in their places sodium. "Thus hard water is made soft, losing lime and gaining sodium." The same thing happens in soils. Alkali soils are a common instance. By suitable chemical treatments, it has been found that the calcium may be substituted for sodium, and the soil again made suitable for plant growth.

Another interesting and practical aspect of this problem is the fact that potash can be fixed by the soil. At the same time, calcium and magnesium are released. Thus it sometimes happens that when a potash fertilizer is added to a soil, the amount available in the soil moisture will be very slight, but instead of potash there will be a large increase in the amount of dissolved calcium and magnesium.

The importance of this fact is shown in some recent work on a "dieback", a disease of prune trees. The evidence seems to indicate that the soil cannot supply sufficient potassium to to the trees. The author considers it possible that the potassium may be fixed in the soil. Therefore, sufficient potassium can only be made available to the trees through the addition of unusually large applications of potash salts. This phenomenon, especially on certain soils, is being now investigated. Another set of problems being studied arises, not from the excessive fixation of certain elements but the leaching which occurs on highly sandy soils. Deficiencies of nitrogen are the important factor in such soils. The study of elements, other than nitrogen, phos-

phorus, and potassium is a very important part of the work. Such elements include manganese, boron, and zinc. Some results are reported.

Another phase of the investigation is to determine the reason for the decreasing yields of alfalfa. Other phases of the work deal with the stages of growth of the plant when the chief absorption of plant nutrients take place.

In applying the results of such work, especially where fertilizers are involved, the author stresses that field tests or experiments are necessary. He points out some of the chief requirements of such tests. It is very gratifying to know that several fertilizer companies and large farmers are making grants to carry on this work. It indicates in a marked degree the realization of the industry and fertilizer consumers that the most profitable use of fertilizers is based on sound research work. Such research must precede all real and lasting progress. This account of the investigation by Professor Hoagland argues well for future progress in California.

*"Liming Onions," Agr. Exp. Sta., Amherst, Mass., Bul. 237, Oct., 1927, J. P. Jones.*

*"Fertilizer and Cottonseed Meal Analyses Report, Season 1926-27," Dept. of Conservation and Inspection, Little Rock, Ark., Dr. W. F. Manglesdorf and G. W. Roark.*

*"Official Inspections 125," Agr. Exp. Sta., Orono, Maine, Oct., 1927.*

*"Analyses of Commercial Fertilizers, Fertilizer Supplies and Home Mixtures for 1927," Agr. Exp. Sta., New Brunswick, N. J., Bul. 456, Oct., 1927, Charles S. Cathcart.*

*"The Influence of Fertilizers on the Vitamin-B Content of Wheat," Agr. Exp. Sta., Wooster, Ohio, Bul. 415, Dec., 1927, C. H. Hunt.*

## Crops

According to a recent bulletin from California, the greatest obstacle to the success of the fig industry at the present time is the occurrence of various forms of rot, souring, and molding of the fruit. Therefore, Circular 311, "The Improvement of Quality in Figs," by Ralph E. Smith and H. N. Hansen, will be valuable in the possession of growers of this special crop. The bulletin is well illustrated, making it fairly easy to identify diseases, and follow out directions for control.

Another recent bulletin of particular interest to orchardists is Massachusetts Bul. 238, "Head Formation in Apple Trees," by J. K. Shaw. This bulletin, too, is full of illustrations showing how to prune, and the results to be obtained from deficient pruning.

Other bulletins received during the month include:

*"Annual Report of the Director For the Fiscal Year Ending June 30, 1927," Agr. Exp. Sta., Newark, Del., Bul. 152, Nov., 1927.*

*"Biennial Report of the Massachusetts Agricultural Experiment Station," Amherst, Mass., Public Document 31, Sidney B. Haskell.*

*"The Quarterly Bulletin," Agr. Exp. Sta., East Lansing, Mich., Vol. X, No. 2, Nov., 1927.*

*"Canada Thistle, Cirsium arvense Tourn. Field Thistle, Creeping Thistle," Agr. Exp. Sta., Wooster, Ohio, Bul. 414, Nov., 1927, Freda Detmers.*

*"The Bimonthly Bulletin," Agr. Exp. Sta., Wooster, Ohio, Vol. XIII, No. 1, Whole No. 130, Jan./Feb.*

*"A Review of Five Years of Fact Organization and State and Regional Program Making in the Western States, and a Report of the 1927 Extension Conference," U. S. D. A., Washington, D. C., Misc. Pub. 8, Sept., 1927, W. A. Lloyd.*

*"The establishment of Standard Grades for American Cotton Linters," U. S. D. A., Washington, D. C., Misc. Pub. 10, Nov., 1927, Guy S. Meloy.*

*"Work of the United States Dry-Land Field Station Ardmore, S. D., 1912 to 1925," U. S. D. A., Washington, D. C., Tech. Bul. 17, Sept., 1927.*

*"American Potato Journal," Washington, D. C., Vol. IV, No. 12, Dec., 1927, C. L. Fitch.*

*"The Pennsylvania Tobacco Situation," Penna. D. of A., Harrisburg, Pa., Vol. 10, No. 1, Jan. 1, 1927, Gen. Bul. 435, C. G. Jordan and P. R. Taylor.*

## Economics

The agricultural depression has been accompanied by declining prices of farm real estate. The index number declined from 170 in 1920 to 120 in 1927. The purchasing power of the price of farm real estate is less than prewar.

*(Turn to Page 56)*

## Pages From A Field Note Book

# Asparagus

*By G. R. Cobb*

Salisbury, Maryland

THE popularity of "grass" growing deserves consideration. From Cape Charles, Va., to Wilmington, Del., and up into New Jersey farmers are getting more and more interested in this crop.

Green grass is still grown and sold, but the day is not far distant when white grass alone will be grown. At present there is a market for green grass, but a bonus is paid for white grass.

Rows should be about five feet apart, and plants set from 15 to 20 inches apart in rows, and as deep as possible.

The best growers apply a ton of fertilizer per acre. Some use 800 pounds of 5-8-5 just after the plants are set, then about 1,000 pounds when the plants are laid by, plus an application of 800 pounds of a 7-6-5 in the early spring. Other very successful growers apply a ton of 6-10-15 per acre after cutting has stopped, and in the early spring they apply 400 pounds of bone plus 400 pounds of nitrate soda.

George B. McKeown, Elkton, Md., probably one of the best growers on the Shore, follows the above practice and makes this statement, "The two most essential things in growing asparagus are potash and controlling the beetle." He sprays and dusts with arsenical poison after cutting has stopped until frost kills the plants and the stalks are cut down. Thorough spraying or dusting will control the beetle to a large extent.

Cutting lightly the second year has often given fine results, although this is contrary to general advice. Mr. McKeown advises grading the grass into at least two and better three grades; packing carefully; and using some distinctive label or tape.

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# Here and There

*By Henry T. Maddux*

Atlanta, Georgia

Farmers in Carteret county, North Carolina, are using for sweet potatoes a fertilizer analyzing 8 per cent phosphoric acid, 3 per cent ammonia, and 10 per cent potash.

Fertilizer tests with sweet potatoes in Virginia have shown that 12 per cent potash in a fertilizer mixture gave the best results.

One thousand pounds per acre of a fertilizer analyzing 8 per cent phosphoric acid, 4 per cent ammonia, and 9 per cent potash, on a Tifton sandy loam at Tifton, Georgia, in 1927, increased the yield by 38 per cent as compared with 1,000 pounds of an

8-4-4 per acre.

* * *

County Agent E. H. Garrison, Jr., has reported that N. McCrimmon of Leaman, N. C., acting upon the advice of E. Y. Floyd, Extension Tobacco Specialist for the North Carolina State College, conducted a demonstration in 1927 with tobacco using 1,000 pounds of a fertilizer analyzing 8 per cent phosphoric acid, 3 per cent ammonia, and 3 per cent potash on one acre as compared with 1,000 pounds of a 10-4-6 on an adjoining acre.

The yield on the 8-3-3 acre was 1,100 pounds and on the 10-4-6 acre 1,344 pounds. The crop from the 8-3-3 acre brought $127.91, while the crop from the 10-4-6 acre sold for $279.50. With only a small difference in the cost of the fertilizer on the two acres, the difference in gross returns amounted to $151.59, which amount is about 10 times the cost of the fertilizer on the 10-4-6 plot.

This demonstration shows how careful the farmer should be to get the very best fertilizer for money crops like tobacco where both yield and quality of crop are such big items.

* * *

A potash demonstration with corn was conducted on the Transylvania County Farm at Salica, North Carolina, in 1927 under the supervision of County Agent L. A. Ammon. A bottom soil typical of the mountain regions of North Carolina, South Carolina, and Georgia was used. The following results were obtained:

| Fertilizer Per Acre | Yield Per Acre |
|---|---|
| 400 lbs. 8-0-0 | 57.1 bu. |
| 400 lbs. 8-0-2 | 61.4 bu. |
| 400 lbs. 8-0-4 | 65.7 bu. |
| 400 lbs. 8-0-6 | 72.9 bu. |

The common practice on this type of soil is to use only acid phosphate in fertilizing corn. Comparing plots 1

The corn in the foreground was fertilized with 400 pounds of acid phosphate per acre. The corn in the background received 400 pounds of acid phosphate and 80 pounds of muriate of potash. These photographs were taken on the farm of Ed Paige, Rabun Gap, Ga.

and 4 we find that $1.20 worth of potash returned $15.80, with corn at $1.00 per bushel. Comparing plots 2 and 4 we find that 80 cents worth of additional potash returned 11½ bushels of corn increase. The potash was used as a top-dressing.

* * *

Ed Page of Rabun Gap, Georgia, conducted a similar potash demonstration with corn in 1926 on the same type of soil as that at Salica, North Carolina. The land had been grown continuously in corn for about 10 years and had received about 400 pounds of acid phosphate annually. On one acre Mr. Page used 400 pounds of acid phosphate and made three bushels of corn. On an adjoining acre he applied 400 pounds of acid phosphate and 80 pounds of muriate of potash and harvested 43 bushels of corn. This demonstration shows the wonderful results of potash in corn growing where a potash deficiency has been created through improper fertilization of the crop.

* * *

County Agent C. T. Owens of Fitzgerald, Georgia, has reported that a club boy, W. H. Robitzch, had two acres in corn, each acre fertilized with 400 pounds of 9-3-3 and two tons of stable manure. To one of these acres he added 100 pounds of muriate of potash as a top-dressing when the corn was about eight inches high. On the potash acre the boy harvested 82 bushels of corn and on the check acre 67 bushels.

* * *

J. L. Covington of Jonesboro, North Carolina, conducted a potash demonstration with cotton on a Coastal Plain soil in 1927, two plots of one acre each being used.

He fertilized both acres with 1,000 pounds of a fertilizer analyzing 8 per cent phosphoric acid, 3 per cent ammonia, and 3 per cent potash and also 100 pounds of sulphate of ammonia. To one of these acres he added 200 pounds of kainit as a top-dressing.

The kainit acre produced 2,355 pounds of seed cotton and the other acre 2,050 pounds. The increase from the 200 pounds of kainit, worth about $1.80, was 305 pounds of seed cotton, valued by Mr. Covington at $21.90. On the check acre 30 pounds of actual potash were used and on the kainit acre 55 pounds of actual potash.

* * *

A. B. Webb, one of the largest tomato growers in the Redland section, Miami, Florida, reports that he is using two tons of a 4-8-8 fertilizer per acre on his tomatoes this year. He plans to get 350 crates of marketable tomatoes per acre when using this quantity and grade of fertilizer.

Two years ago Webb tried three tons per acre of 4-8-8 fertilizer, and received 889 crates per acre on part of the field.

* * *

C. A. Steffani, agricultural agent, Miami, Florida, says that the larger and successful tomato growers in Dade county use two tons of fertilizer per acre analyzing 4-8-8. In some cases the amount is increased to two and a half tons, and a few growers use as much as three tons.

* * *

Mr. B. G. Fay, Winter Haven, Florida, is using a fertilizer containing 13 per cent potash (3-10-13) on his citrus grove. He reports that since using this fertilizer his fruit has been of extra good quality, and uniform in size. He has had no trouble with the fruit splitting, or with die-back trees, since using plenty of potash.

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Boss—What are you two darkies doing walking so slowly up those stairs?

Midnite—We is wo'kin', boss. We is carryin' dis heah desk up de stairs.

Boss—I don't see any desk.

Midnite—For de Lawd's sake, Carbona, we done forgot de desk!—

# Carteret Sweet Potatoes

*By A. H. Harris*

Goldsboro, N. C.

Carteret county, "Nature's Gift to North Carolina," is located in the extreme eastern part of the state, bordering on Neuse River, Pamlico Sound, and the Atlantic Ocean.

In the eastern part of the county, the fishing interests are great, but certain types of farming are practiced over the entire area. The tropical climate is very favorable to truck growing, and in certain sections, Irish potatoes, cabbage, and English peas are grown rather extensively. The largest single crop now grown in this section is sweet potatoes, which is steadily becoming more successful and profitable to the growers. The production of this crop is greatly increasing each year, for in 1913 only one carload was shipped by rail to market, while in 1927, 387 carloads were shipped in addition to the amount freighted to Norfolk, Virginia and Baltimore, Maryland by boat, of which no records are available. Local buyers purchase the major part of the crop and ship to cities in the North and Middle West.

It was the old custom to fertilize the crop with 100-300 pounds of an 8-2-2 or 8-3-3 fertilizer and the former analysis goods were used by a majority of the growers. In 1924, Dr. J. J. Skinner of the U. S. Department of Agriculture in cooperation with Mr. C. B. Williams of the North Carolina Experiment Station and the local county agent, started a series of fertilizer experiments with sweet potatoes in this section and proved conclusively that high-analysis potassium fertilizers were needed for the most economical and profitable production of the crop.

As a result of Dr. Skinner's findings, Mr. G. W. Huntley, local planter, business man, and fertilizer dealer, had the fertilizer companies that he represented mix a special, sweet-potato fertilizer analyzing 8-3-10, which he began using on his own farm and selling to his customers. Because of the universal results obtained from the use of this special fertilizer, 95 per cent of the growers in that section have adopted the 8-3-10 fertilizer for the sweet-potato crop, using an application of 800 to 1,200 pounds per acre. The yields vary from 250 to 450 bushels per acre, while under the old system of fertilization, the yields varied from 75 to 200 bushels per acre.

## More Meat From Ton Litter

The Field Packing Company of Owensboro, Ky., recently paid $11 per cwt. for a litter of seven purebred Poland-Chinas weighing 2,008 pounds, raised by Anslem Reisz, a farmer of Daviess co., Ky. President Field of the company made the following report concerning the ton litter:

"A miscellaneous lot of 124 hogs were killed the same day the Reisz ton litter was slaughtered. Their average live weight cost was $10 per cwt., their dressed weight cost $14.38 per cwt., and their yield 69.53 per cent meat. Reisz's seven pigs cost $11 per cwt. live weight and $14.22 per cwt. dressed weight, with a meat yield of 77.34 per cent. The cost of their dressed meat was, therefore, 16 cents per cwt. less than the cost of the meat obtained from the 124 miscellaneous hogs, in spite of the fact that they cost $1 per cwt. more in live weight. In addition, the meat from the ton litter is worth at least a half a cent a pound more."

# Suggestions for Improving Corn Yields

*By* Paul Tabor
Georgia State College of Agriculture

Circular 132

1. The greatest improvement in corn yields can come through improving the soils. The average yield on improved lands at Athens is about 40 bushels per acre, while the average for the state is less than 15. More legumes will be the principal way of improving the land for corn.

2. The small-eared, highly prolific varieties will give best yields on average to good lands, especially during the most favorable years, when yields are above 50 bushels per acre. Whatley's and Hasting's prolifics are the most popular varieties of this type. Marlborough is a splendid variety for average conditions.

3. Good, sound corn is needed for seed. If the pith of the cob at the butts of the ears is open and dark or pink in color and if the grains are dull in color, the seed should be rejected.

4. Highly-uniform corn is not believed to be as good as variable corn. Do not select for extreme uniformity. Some of the best varieties tested at Athens are crosses between widely differing corns.

5. The best time for planting corn will vary. In some sections, early planting is necessary to get the crop through the critical stage about tasseling and silking before hot or dry or extremely wet weather, but over most of the state, corn can be planted over a period of 60 to 90 days. Forecasts for the best time of planting have not been perfected. Two or three plantings instead of one will be preferable during most summers.

6. Soil for corn should be loose. Deep plowing on the heavier soils turning under coarse organic materials and harrowing afterward are both needed. Some of the lighter soils need very little plowing. Planting in a water-furrow will usually increase the yields slightly on the well-drained hill soils, provided the young corn plants can get a good start in the furrow. If the soil is cold or is shallow and poor so the young corn does not get started off well, planting in the water-furrow may decrease the yield unless stable manure or commercial fertilizer is used in the furrow. Planting in a water-furrow during the middle and latter part of the season will give best results. Corn plants in a water-furrow can be prevented from suckering too much by throwing dirt to them during the early cultivations.

7. Nitrogen fertilizers are most needed by the corn crop. These are believed to increase the yield most on wet years, favorable to corn production. By applying quickly available nitrogen fertilizers at the time of planting, the corn crop will be hastened to maturity. By applying the nitrogen later, the time of maturity at least in some instances will be delayed. Later applications are usually best. Acid phosphate is the second needed fertilizer for corn.

Potash is badly needed by corn in some places. On the low, poorly drained soils in southeast Georgia, where "frenching" of the corn plants occurs, in the valleys between the mountains in northeast Georgia where spots of land fail to make corn, and probably on some of the poorly drained bottom lands throughout the northern half of Georgia on spots where corn does not grow off well, 30 to 50 pounds of muriate of potash per acre will greatly increase the yields.

On the sandy soils, if corn plants

are inclined to blow over or break off easily, potash will probably help correct these conditions.

8. When heavy applications of fertilizer, especially nitrogen fertilizers, are to be made to the corn crop, it is believed best to make two or more divided applications instead of a single heavy application.

9. Crops planted with corn such as soybeans, peas, and velvet beans, will reduce the yield if they are allowed to compete actively with the corn. By planting the companion crops in wide middles, or by planting them after the corn has made a good start, or by using the late-growing varieties of legumes, the competition between these crops and corn will be reduced to a minimum.

10. If budworms are bad enough to kill the young corn, plant at a later time; if stalk borers are bad, apply fertilizer at the time of planting and use a bigger stalk variety; if crows or other birds pull up the small corn, use turpentine or tar or a coal tar disinfectant on the seed before planting.

# Potash and Potatoes

Fertilizer tests at Ohio Station show that potatoes suffer a great deal more than some other crops from potash hunger. If there is not enough potash when the plant begins to make tubers, the plant becomes stunted, the tubers grow slowly, and the plant dies before its job is done.

Lack of potash is indicated by the color of the plant. The stems of thrifty plants of the Rural New Yorker, Russett Rural or Petosky, Sir Walter Raleigh and similar late varieties are dark blue in color. If potash is lacking, the color of leaves and stems in these varieties is an abnormally dark green.

Early varieties and the Green Mountain group of varieties do not have dark blue stems, hence their leaf symptoms are different. A bronzed leaf in these varieties indicates the need of more potash. Fertilizers should be applied at the time of planting. The application of fertilizer after the tubers begin to set is of little value.

In the Ohio tests, 500 pounds of an 0:10:10 fertilizer drilled broadcast for the potatoes supplied the potash necessary for the potato, wheat and clover crops of the rotation.

In these tests, as little as eight tons of stall manure, which was handled so as to prevent the loss of the very soluble potash, supplied the need of the crops. With ordinary handling much of the soluble material is likely to be leached out, making a larger application of manure or the addition of a potash fertilizer necessary. —*The Farm Journal.*

## GENERAL OVERHAUL

A dentist says that he had an absent-minded motorist in his chair the other day. "Will you take gas?" he asked.

"Yeah," replied the a-m patient, "and you'd better look at the oil, too."—*Boston Transcript.*

## PULLED TOO SOON

A newly-married woman was shopping and was determined that the grocer should not take advantage of her youth and inexperience.

"Don't you think these eggs are very small?" she said critically.

"I do," answered the grocer, "but that's the kind the farmer sends me. They are fresh from the country this morning."

"Yes," said the shopper, "that's the trouble with these farmers. They're so anxious to get their eggs sold that they take them out of the nest too soon."

# The Demonstration Idea In Agricultural Extension Work

(*From Page 30*)

ers had been having trouble in getting stands of cotton on freshly prepared soil, if after sowing, the weather remained dry for several weeks. The plan was to bed the land during late fall or early winter and plant on this ridge. This would give a stored-up supply of moisture in case it turned dry, and likewise good drainage for each row if it was wet after planting.

The first trouble I got into was with weeds and grass which came up with the cotton and, if rains followed, were difficult to kill. This trouble was overcome by harrowing ahead of planting. A few years later, I got into difficulty when, immediately after planting, a heavy rain packed the soil tightly over the seed and they could not get through. This was overcome by using more than the usual amount of seed on such soils as might crust. Year after year the difficulties were overcome.

The farmer with whom I was working, as well as myself, was getting a sound training in all the things needed to make the practice a success under farm conditions. Together we would study the experiments made by the colleges and experiment stations. The actual working of the demonstration kept us "on our toes."

When the demonstration had reached a stage where it could be called an unqualified success we were ready to "tell the world" about it. He was ready to tell his neighbors and those whom we corralled at field meetings at the demonstration or whom we brought to his farm on a tour. I was ready to start a follow-up with articles in the local paper, circular letter, posters, talks at club and community meetings, and personal contacts.

Without the demonstration we could not have made a successful follow-up. If we had stopped our work with the demonstration, he and I with the addition of a few neighbors alone would have profited by the effort.

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# A Hoosier Corn King

(*From Page 29*)

disk cultivator. After the corn was too large to use these tools, one cultivation was given with a one-horse, five-shovel cultivator. The crop was gone over with a hoe to cut out all weeds and barren corn-stalks.

Mr. Ayler used a local strain of yellow corn which he has grown for four years, but he is not satisfied that it will give him the best possible yield. His corn is medium in size, dimple dented, with hard, starchy kernels, but not of the uniformity of the better and more improved types of corn. Ayler is expecting to increase his yield still more through the use of a better strain of corn.

The high points of Mr. Ayler's success in corn growing can be grouped as follows: (1) Plan ahead for the corn crop by using a good legume in the crop rotation, (2) Feed all rough feeds to livestock, and apply manure to tillable crops, (3) Plant high-yielding, adapted, and tested seed corn, free from disease, and plant as thickly as the soil fertility will permit, (4) Practice thorough seed bed preparation and cultivation to kill all weeds, and (5) Use fertilizer alone or to supplement manure to increase yields and improve quality.

# Wilt-Resistant Cotton Varieties

(*From Page* 19)

ing rotation as a control measure unsafe and unpracticable. The fungus gains entrance into the plant through the root system and later forms toxins in the plant which finally accumulate in sufficient quantity to cause the plant to wilt and die.

Wilt-resistant tests were made in 1926 and 1927 with 18 varieties and selections of staple and short cottons on soil which had been artificially inoculated so as to insure more complete exposure of the plant roots to the wilt fungus. Since these experiments have been in progress, considerable difficulty has been experienced in finding resistant varieties which yield moderately well under varying conditions. Sometimes a variety is very resistant to wilt, but on the other hand, it may not be prolific, may be late maturing, or not satisfactory for areas where the boll weevil is a serious factor.

The performance record of the 18 varieties and strains of both staple and short cottons on wilt-infested soil which have been included in the tests during 1927 and many of which were under test the preceding year are given in the following table.

The results indicate that the most promising wilt-resistant staple cottons are Super-Seven, Lightning Express, Watson, and D. & P. L. No. 6. The most promising wilt-resistant short cottons as indicated from these tests are Rhyne's Cook, Dixie Triumph, Miller, and Cleveland 54. The column reporting the rank in money value is based on pounds of lint per acre plus the value of the seed. The lint prices for the various varieties represent an average of five southern market centers and are based on the prevailing prices for middling grade of the indicated lengths.

A more detailed report on these tests is now being prepared for publication and will appear later as a bulletin from the Mississippi Experiment Station.

TEST FOR WILT RESISTANCE OF 18 VARIETIES OF COTTON ON WILT-INFESTED SOIL. SEASON 1927

| Variety | Wilt-infected plants per cent | Rank in resistance | Yield per acre, pounds: Seed cotton | Yield per acre, pounds: Lint | Lint length | Rank in value |
|---|---|---|---|---|---|---|
| D. & P. L. 4128. A21.32 | 35.6 | 11 | 1,432.8 | 500.8 | 1 1/16 | 1 |
| D. & P. L. 6 | 19.5 | 7 | 1,329.6 | 416.8 | 1 3/16 | 2 |
| Watson | 25.3 | 8 | 1,260.0 | 405.7 | 1 1/8 | 3 |
| D. & P. L. 8 | 32 | 9 | 1,226.4 | 463.0 | 1 | 4 |
| Super Seven | 7 | 2 | 1,197.6 | 397.0 | 1 1/8f | 5 |
| Lightning Express | 13 | 4 | 1,128.0 | 384.1 | 1 3/16 | 6 |
| D. & P. L. 52.116.310 | 38.6 | 12 | 1,137.6 | 435.7 | 1f | 7 |
| Miller | 13.6 | 5 | 1,255.2 | 406.1 | 1 1/16 | 8 |
| Dixie Triumph | 9.3 | 3 | 1,238.4 | 421.7 | 15/16 | 9 |
| D. & P. L. 4 | 34.8 | 10 | 1,036.8 | 374.8 | 1 1/16 | 10 |
| Cleveland 54 | 17 | 6 | 1,156.8 | 394.5 | 15/16 | 11 |
| Delfos 6102 | 63.8 | 16 | 1,017.6 | 313.4 | 1 1/8f | 12 |
| Lone Star 168 | 59.3 | 15 | 996.0 | 338.1 | 1 1/16f | 13 |
| Cook, Rhyne | 5.7 | 1 | 1,034.4 | 366.2 | 7/8 | 14 |
| Delfos 245 | 65.8 | 17 | 904.8 | 284.1 | 1 1/8f | 15 |
| D. & P. L. 2842. A17.34 | 51.5 | 14 | 842.4 | 283.0 | 1 1/8f | 16 |
| Delfos 1341 | 71.3 | 18 | 724.8 | 233.0 | 1 1/8f | 17 |
| Trice | 46.5 | 13 | 789.6 | 247.5 | 1 1/16 | 18 |

# Let Nature Provide

(*From Page* 44)

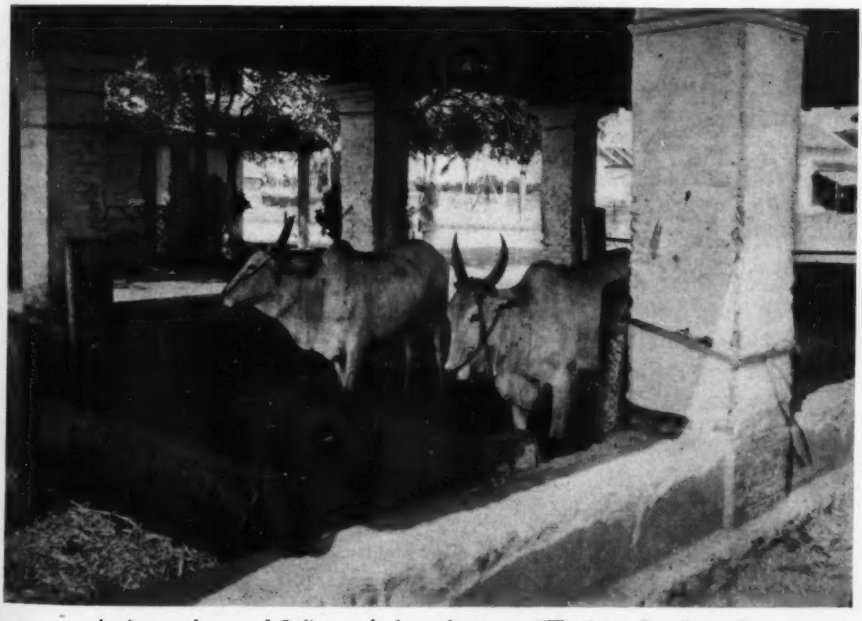
Indian farmer has provided no food for his cattle. Day after day they wander in the waste places seeking a bite. They soon lose their sleek fat coats. After five months of semi-starvation the cattle present a pitiable picture indeed. There are no silos filled to the top or barns full of fresh hay. The Indian farmer has made no effort to supplement Mother Nature.

"Winter is coming," says the American farmer and provides not only food but also shelter for his cattle. Many a dairy cow lives happily in her fashionable winter home from the time the first snow flies till the green grass again offers a tempting spring tonic.

No such precaution is necessary in India. A tuberculosis sanitarium system of fresh air is much to be preferred to the American hip-roofed cow-palace. In good weather the animals are tethered to wooden stakes driven into the ground in the open courtyard back of the house. This is a very satisfactory arrangement for nine months of the year. The more fresh air the better during the hot nights. Very often the farmer will drive a row of stakes out in the open field and tie his cattle there during the night. The stakes will be moved once a week. It affords an easy and efficient way of manuring the fields.

Three months of the year, during the rainy and so-called cold season, some shelter must be provided. Frequently the front porch or veranda of the farmer's house is pressed into service. More frequently still, the family cow will be invited inside to share the farmer's one room with the family, the pigs, and the chickens. The babies can cuddle up to the cow's back or flank and keep warm. It also prevents any of the neighbors stealing the baby's breakfast.

Sometimes a crude, open-air barn



An improved type of Indian-cattle barn, known as "The Loose Box System."

is provided at the back of the farmer's house. A few eight-foot stone pillars are planted in the ground. Across these are laid other stone pillars and flat, stone slabs form the ceiling. This affords ample protection from the sun. During the rainy season in the fall, the north and east sides will have screens provided to keep out the wind and driving rains.

When the rice is threshed, the straw is stacked above the cattle. This is fed to the oxen while they are being used to do the farm work.

In many respects nature is kind to the people of tropical India. But because nature is so kind and dependable, the people have not been forced to look into the future and provide for a "rainy day" as has been the case with the American farmer.

# Reviews

(*From Page* 46)

U. S. D. A. Circular 15, "The Farm Real Estate Situation, 1926-27" by E. H. Wiecking, gives index numbers of the prices of farm real estate in the United States, by states and geographic regions from 1912 to date. These data are very useful in showing how owners of farm property have been affected during the depression.

**Diseases**

*"Observations on some Alfalfa Root Troubles," U. S. D. A., Washington, D. C., Dept. Cir. 425, Aug., 1927, J. L. Weimer.*

**Insects**

New tactics in war are always interesting. Therefore, U. S. D. A. Cir. No. 14, "Status of Imported Parasites of the European Corn Borer," by D. W. Jones and D. J. Caffrey, Entomologists, should receive considerable attention. War against the corn borer will be freshly fought again this year, and the release of two million little insects to aid in the destruction of the enemy is a new maneuver. The work of these parasites will be closely watched to ascertain whether the importation and breeding of them will be advantageous.

*"Grape Insects and Diseases," Pa. D. of A., Harrisburg, Pa., Vol. 9, No. 16, Sept. 1-15, 1926, Gen. Bul. 433, J. R. Eyer and W. A. McCubbin.*

# Figuring Out Menus

(*From Page* 14)

responded to additional applications of calcium in the form of lime even though they were quite strongly acid.

"Failure of alfalfa and sweet clover, as well as of other crops, is often due to insufficient amounts of available phosphorus or potash, while this failure in the case of soils showing considerable acidity is now attributed almost entirely to the need of additional lime. Indeed, the use of phosphate fertilizer is being found as generally beneficial and profitable as lime, and many soils require potash also. It must be remembered that alfalfa has a high potash requirement and unless manure is used to supply it, commercial fertilizers must be used. This is especially the case on sandy soils, but even fairly heavy soils are sometimes low in available potash.

"Acidity itself is apparently seldom the cause of failure of alfalfa in Wisconsin when there is enough available lime, phosphorus, and potash. It is becoming more and more evident as a larger variety of soils are studied that we must take these facts into consideration and not assume that lime will correct all cases of failure to secure good crops of alfalfa. This study is being continued in an effort to work out more accurate means of determining available lime."

# How Well Does the Farmer Live?

(*From Page* 10)

About on the same level are the negro cropper families of the old cotton States. Then come the negro tenant farmers, distinguished from the croppers by the possession of workstock and implements and therefore belonging to the entrepreneur class. White tenant farmers in the same region have generally no higher standard of living than a considerable proportion of the negroes. What has been said of Gwinnett county, Georgia, might serve as a general description of living conditions among this group.

Then there are the mountaineers of Kentucky and Texas and the people of the Atlantic coastal plains and the swampy regions of Maryland and Virginia, with whose humble way of life romantic fiction has made us acquainted. Farm groups in parts of New England and northern New York have been forced to a low standard of living by harsh natural conditions and by the exodus of their best individuals. They have not kept pace with changes in agricultural methods, but have preferred a meagre livelihood to being forced off the land altogether. All these extremely low standard groups are characterized by relative inefficiency and unprogressiveness. They are marginal people on marginal land. They are in retreat from the modern competitive struggle, but it is overtaking them and freezing them out.

That sort of people are not found anywhere on the pioneer frontier, or in the regions that were but lately pioneered. In the Middle and Western States, even where conditions are hard, the farming population is energetic, capable, and relatively prosperous. There are no very low standards of living among the farmers of the Middle West, Southwest, Mountain, and Northwestern States. Life to them means more than a livelihood. They are in difficulties at present, from the effects of the postwar deflation in commodity prices and in land values. Their difficulties, however, are not the kind that oblige people to go without sufficient food or clothing. It is their financial position, rather than their standard of living, that has been damaged by the postwar agricultural depression. What they are worrying about is the difficulty of achieving financial independence, rather than the difficulty of keeping the table supplied and the automobile running. This is not to say that their troubles are unimportant, but merely that they are not immediate bread-and-butter troubles.

Marginal farming is as bad for agriculture as sweated labor or price-cutting is for industry. When too many farmers are willing to work for a pittance, there is chronic danger of overproduction. Therefore, in spite of the fact that standards of living are not low among American farmers as a whole, it is desirable to raise them where they are low.

This cannot be done merely by insuring farmers larger incomes. Standards of living are complex things. They are determined as much by the way money is spent as by the amount of it that is earned. Traditional habits, education, and general intelligence have much to do with ways of living. If the will to achieve a higher standard of living is not present, increased earnings will almost certainly be dissipated uselessly.

This has been often demonstrated. In the war period, American farm earnings were increased enormously. Yet the gain did not cause any advance in living standards because most of it was squandered in speculation. Southern farmers after the war raised crops worth half their farms. They plunged into real estate trading, gambled away their profits, and ended

further behind than when they started. This is worth pondering by those who think the relation between farm earnings and standards of living is one of cause and effect. Indeed, it is possible for the desire for increased earnings to lead to lower rather than higher standards of living.

That sounds paradoxical, but the explanation is simple. Many farmers, as they advance economically, increase their production capital at the expense of their families' welfare. If they spend money on the farm, they call that an investment. But what they spend on the home is extravagance. When too much of the farm income is turned into additional working capital, the farm family has to skimp and production is stimulated. When a great many farmers behave in that way, they lay up trouble for themselves. To restrict consumption while at the same time stimulating production is a sure way to make prices fall. Eagerness for more income thus defeats its purpose.

It would pay the farmers better as a group to spend more on their homes and less on their farms. Production might thus be decreased, but that would be salutary in most lines. Farmers diminish rather than increase their incomes by converting every possible dollar of income into production capital; and at the same time, by stinting the home, they fix living standards at a level that retains more men in the farming business than it requires. There is overproduction in agriculture largely because too many farmers are content with standards of living that would be scorned in other occupations. Theoretically, an underpaid industry is quickly restored to par by an exodus of workers from it to more favored callings. That doesn't happen with agriculture because too many farmers do not realize how much less they are getting than other producers. Farm income is invested in the truest sense when expended to raise the farm standard of living. Thus expended it produces not only material well being but the mental attitude that is indispensable to economic progress.

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# Potato Experiments

(*From Page 27*)

shows very similar results to the Farmingdale experiment on all plots where potash was derived from sulfate. In this experiment, however, the muriate form of potash gave an average increase in yield of 2.9 bushels per acre. The one at Hicksville, Long Island, was conducted on soil which had grown potatoes five years previous to the experiment and which had received annual applications of one ton of a 5-8-7 fertilizer. The results of this experiment indicate the residual effect of the previous applications as there was no increase in yield when more than five per cent of potash was applied in the sulfate form.

Where muriate of potash was applied in a 5-10-10 analysis in comparison with sulfate of potash in a similar analysis, there was a difference of 51 bushels per acre in favor of the muriate form. By comparing the results of the three fields, it is clear that the fertilizer to be recommended for the most economical and best yields of potatoes must be determined by a careful study of previous cropping and previous fertilizer treatment, together with a better knowledge of the

residual value of fertilizer under different soil conditions. A careful analysis of the experiments discussed here is of particular interest in that considered as a group, they show an appreciable difference in favor of the muriate form of potash.

In the introduction to this article, it was stated that increased profits might be secured from an acre of potatoes by increasing the yield without a proportionate increase in cost of production. The experimental data given has shown the possibility of increasing the yield of potatoes by the use of a fertilizer carrying from 5 to 10 per cent of potash in the form of muriate or sulfate of potash.

It should be noted that this procedure does not in any way increase the cost of any other production operation. The manure and seed used are the same whether no potash, or 10 per cent potash is used. Likewise, there is no increase in the labor costs of such operations as cultivating and spraying. The amount of man or horse labor is the same in either case. The difference in the cost of fertilizer is the only increased item of cost in producing an acre of potatoes. The addition of five per cent potash in the sulfate form, figured on the basis of $60 per ton the average retail price, means an increase of $6 per ton or per acre where the application is a ton per acre. The same amount of potash in the muriate form would cost only $5. The addition of 10 per cent of potash in sulfate form or muriate form, therefore, would cost just twice as much as where five per cent was used.

Under the conditions of the Farmingdale experiment the yield of marketable potatoes was increased by the use of potash as follows:

| | bushels |
|---|---|
| **1926** | |
| 5-10-0 to 5-10-5-S increase | 39 |
| 5-10-0 to 5-10-10-S increase | 106 |
| **1927** | |
| 5-10-0 to 5-10-5-S increase | 145 |
| 5-10-0 to 5-10-10-S increase | 156 |
| 5-10-0 to 5-10-10-M increase | 143 |

The role of potash in increasing the yield of potatoes cannot be ignored in this day of high labor costs and keen competition. Potash is an indispensable ally in the production of better potato crops. The form of potash deserves careful consideration and must be determined by relative cost of this element and results obtained.

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# North Dakota

(*From Page* 24)

In August, 1918, Dr. P. F. Trowbridge came to the North Dakota Experiment Station as the director. He had been located at the University of Missouri as head of the agricultural chemistry department. Dr. Trowbridge's successor, Thomas Cooper, went to the Kentucky Experiment Station as its director. It was while Dr. Trowbridge was at the University of Missouri that he became familiar with meats and meat cutting. He was chairman of an experiment concerned with nutrition of meats. Now at nearly every college meeting of North Dakota farmers, Dr. Trowbridge is called on to give a demonstration on meats and meat cutting. His picture shows him in action with the meat knife.

Climate and soils are the basic agricultural assets of North Dakota. With that idea in mind Dr. H. L. Walster, agronomist and dean of the School of Agriculture, by using the data assembled by the weather bureau of the United States Department of Agriculture, constructed maps that show the average length of the frost-free season. He constructed maps

that show the per cent of frost-free seasons which have been longer than 105 days; maps that show the average mean temperatures for June, July, and August; average date in May of the last killing frost in spring; average date of the first killing frost in September; and maps that show the rainfall in North Dakota.

An experiment pertaining to the effect of crop sequence on wheat yields shows that wheat yielded on the average of 16.2 bushels per acre with a continuous rotation of wheat alone since 1882. In one case of a corn, wheat, red clover, and flax rotation with corn preceding wheat, the wheat yielded 26 bushels per acre.

Hogging-off trials were carried on in 1924 by the department of animal husbandry. The pigs used were raised on good alfalfa pasture, supplemented with a concentrated mixture consisting of 40 per cent barley, 50 per cent shorts and 10 per cent tankage, with free access to a mineral mixture containing 10 bushels soft coal slack, ½ bushel salt, and 1 bushel air-slacked lime.

The trials showed that the market will pay a premium for hogs that qualify for Wiltshire sides; that the hogs must be marketed without bruises; that breeding, selection, and feeding are important factors in producing hogs of the required type and finish; that to succeed in producing hogs suitable for Wiltshire sides it is necessary to have a full understanding of the type of hog required; and that corn can be successfully hogged-off and a high percentage of Wiltshire sides produced, providing the hogs are of the right type and are not allowed to become overdone.

Protein surveys of the wheat crops of 1923 and 1924 were made in cooperation with the extension division and the agronomy department at the college. More than 200 samples were handled from the 1923 crop, while 400 samples were handled for the 1924 crop. The 1923 crop was a high protein crop as the average of all the samples was 13.2 per cent. These protein tests on wheat lead to a selection for greater protein content in wheat. This is essential for the bread-making properties in wheat flour.

Two major projects are now going on in the veterinary science department. One is on avian tuberculosis and the other is on sweet clover poisoning of cattle due to the eating of spoiled sweet clover or silage.

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# America's Markets

(*From Page* 18)

by the Bureau of Agricultural Economics showed that Wisconsin potato growers received 25.7 cents of the Chicago consumer's dollar, and Minnesota potato growers 20.6 cents. The country buyers' margin on the Wisconsin potatoes was 16.9 cents, and on the Minnesota potatoes 15.7 cents. Freight to terminal market was 10.4 cents on the Wisconsin potatoes, and 13.6 cents on the Minnesota potatoes. The wholesaling and jobbing margin was 9 cents on Wisconsin potatoes and 11.1 cents on Minnesota potatoes, and the retailer's margin was 38 cents on Wisconsin potatoes, and 39 cents on Minnesota potatoes.

The study revealed that the growers received from 20 cents to 25 cents of the Chicago consumer's potato dollar, or from one-fifth to one-fourth the ultimate retail price. The country buyer and freight to terminal market took another 25 cents on the dollar, and city distribution was approximately one-half the retail price.

Discussing the results of the survey, the bureau declared that to keep potatoes flowing into the market in quantities sufficient to meet demand, the wholesaler must provide storage space to house supplies sufficient to

meet the fluctuations in demand. He must be equipped to grade all potatoes received not graded, improperly graded or in bad condition, and large quantities of potatoes received in bulk must be sacked. These services require the furnishing of floor space and equipment and employment of labor.

### *Jobbers to Retailers*

The warehouses are usually at or closely adjacent to some railroad terminal. Here the potatoes are resold in less than carlots to jobbers who, in most markets, haul them to salesrooms or warehouses, usually located in a section devoted to this type of business. The principal functions of the jobbers are rapid turnover and distribution of relatively small quantities of produce to the retailers.

From the jobbers the potatoes pass to the retailers and are either hauled by them or at their expense, to their places of business. The retailer must select and maintain a well-assorted stock of products, assembled at a place convenient for housewives to visit and make purchases. Location has become an important factor as the housewife now apparently desires to purchase in small units.

The retailer must provide or expend money for salesmen's wages, rent, taxes, interest on investment, and delivery expenses. Where credit is extended there must be a somewhat higher interest cost, because of the additional funds needed to carry accounts. The chain stores have partially solved many retail problems through direct buying in wholesale lots, and the elimination of credit and delivery service, although recently in the outlying sections of Washington, D. C., chain stores have installed delivery service. A study in New York City showed that the average spread in wholesale and retail prices for chain stores was 43 per cent below the spread prevailing in the typical form of unit store.

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# Taxes

(*From Page 6*)

about the bills he owes and the obligations he assumes with such nonchalant suavity. A municipal bond issue means nothing to him. Why, he belongs to a noon lunch club whose slogan is "progress and pride."

Of course, on the other side of me lives the other extreme type—the old squeeze who wants the government to run on a shoe-string. One night he came over all radiant with thrifty joy over the news item that the President had taken a Pullman berth to Chicago instead of a private train, thereby saving a cool three thousand four hundred and seventy nine dollars. He raved about it considerably, until I showed him that when the President returned home he found that the Navy Department had sunk two obsolete battleships costing four million dollars; and I further pointed out that the glue on the postage stamps was not holding worth a cent. I remarked that I didn't admire government thrift that forces my office boy to sit for half an hour on my outgoing letters so the stamps won't curl off them.

He represents the kind of taxpayer who puts his foot on a penny that somebody dropped, while a flock of "eagles" are soaring like airplanes over his head.

Taxes are paradoxical. They have caused wars and promoted peace. Taxes built the Great Wall of China and the county poor farm. They stocked the New York Public Library and the Library of Congress, and they built Sing Sing prison and Leavenworth. They supply policemen with billy clubs and nurses with bandages.

They open new lands for settlement and offer funds to relieve crop surplus. They deliver your mail and collect your garbage. They buy chalk for teachers and straight-jackets for lunatics. They open movements and close the stills.

THERE is usually only one place to pay taxes, but numerous places to assess them, and an infinite number of ways to spend them. The place where you pay taxes is like a funnel that collects streams of subsidy from many sources and pours them all into the neck of a limitless and elastic reservoir.

Your school district, your town or city, your county, and your state absorb the greatest portion of what you pay. It is no idle phrase to refer to the state and its subdivisions as the "commonwealth."

The men who direct the spending of the bulk of your budget are close enough for personal chastisement, but protests to them are few compared to the truck loads sent down to Washington. Distance lends enchantment, but proximity borrows your dollar and uses it right under your nose for whatever purpose expediency suggests.

Back in the days of the New England town meeting, the election of selectmen and the problem of public weal held important places in the minds of the pioneers. But in this age of country clubs and commercial complexity nobody has time for town meetings or ward caucuses. No, we have grown out of it—sort of graduated—into the *primary*. Probably that's why we take such an infantile interest in public questions. We pick a man for office because he says he'll be good to us!

By "us" he means the chart class in the *primary*, the big, glorious, gullible majority—for we can mark an X after a nice man's name! Torchlights, transparencies, red fire, and hard liquor are gone from the election scenery; and corner fist fights growing out of campaign arguments are unseemly for this day of pre-digested dogmas. Our spirited controversies have shifted from themes of political economy to the church and the golf course. They are more our own size, no doubt—the government has grown beyond us!

Apparently, taxes are to be avoided or evaded by those who see no moral obligation in them.

My friend, living on a farm where prosperity is evident to the assessor, gets his name spread on the minutes as a juicy taxable asset to the state. If Sam can avoid remembering a few cows off in the back pasture he may save twenty cents on his tax bill.

Another friend, sitting behind a mahogany desk beside a corporation lawyer, nicks out a few deductions from his tax return and then finds, despite a remarkable memory for details, that he faces a tax of seventy per cent of his income. With a bland smile, his legal adviser, who is also a bond agent, introduces him to a grist of gilt-edge investments not incumbered with government revenue.

THE big income in the upper brackets thereby dissolves into the realm of an enchanted land where the spook of tax time never enters. Old Man Hardscrabble, who wanted to put the rate "so durned high that it will make the rich man squirm" overshot his mark—or rather, the obliging statesmen did it for him. But if we have too many tax dodgers, we also have a numerous company of tax botchers. They contrast the terrific difference in public debt between tallow candle times and the age of Edison, and point out that the Ship of State is foundering with slimy barnacles and alive with joy-riding stowaways.

After getting the audience convinced that peace may be all that Sherman said about war, they do like the peripatetic medicine fakirs who used to visit our village green on magical sum-

mer evenings. They roll up their sleeves, open their grips, and discover a brand of salve that will anoint the taxpayer's sores like sorcery, and put the weight of public iniquity and extravagance where it belongs—on the shoulders of the other fellow, or else on the *minority*. The *majority* shall never be over-taxed if they can help it.

If they were content to be evangelists and did not aspire to be salvationists in some official capacity, the case against them might even be reversed in their favor. For we *do* need voices of portent and war-cries of warning when facing advances in the high cost of liberty.

But they press their advantage and become the chosen shepherds to place us, by hook or by crook, in some cozy fold secure from the slobbering jaws of predatory public obligations. They wade into the vortex of incomes, inheritance, real and personal property, surtax, sales and luxury levies, and usually wind up by making one new excess for every excise we had before.

WITH lack of time and absence of training, and hampered with prejudice, it is no wonder that such men turn out tax legislation framed by *tinkers* rather than by *thinkers*.

I hinted that I would drag in philosophers on this case, much like a lawyer fetches in an alienist. So we consult the experts in closing:

Plato complains that whereas in simpler matters, like shoemaking, we think only a trained person will serve our purpose, in politics we presume that every one who knows how to get votes knows how to administer a city or a state. He would have devised a method to bar knaves and incompetents from office.

Aristotle wanted the road to office open to all in a democracy, but he wanted it sufficiently aristocratic so that the offices themselves would be closed except to those who arrive fully prepared.

Spinoza said that the defect of democracy is its tendency to put mediocrity in power, and he claimed that there is no way of avoiding this except by limiting office to men of trained skill.

Voltaire takes a little more cryptic and modern viewpoint when he exclaims: "What difference does it make to a poor man whether he is devoured by a lion or gnawed by a hundred rats?" He seems to feel that the aristocracy of brains when put in office may serve the average citizen no better at times.

BUT I believe that the sentiment of our own serene philosopher, Santayana, strikes a far more hopeful idealism—if we can use that term on so dross a matter of materialism as taxes. Hearken to this:

"A society is to be judged by the measure in which it enhances the lives and capacities of its constituent individuals. No nation deserves to be remembered except for the *excellence of some great single life!*"

Pretty strong stuff for my neighbors to swallow! But how true nevertheless! We have just quoted two Grecian men of letters who lived by some public help; yet only imperfect and useless ruins are left of the structures and the roads that the Greeks paid for collectively. Rome likewise is gone in its visible state, but we have Caesar and the laws of Justinian—and so on down the ages.

IF, then, we continue to expend public revenues upon education and social improvement — stressing *that* instead of prying and bullying—it is a reasonable hope that this country will not have existed in vain.

I would even forego one cigar a day and walk to work part of the time if I thought this provident sacrifice might help Uncle Sam develop a real human landmark out of a portion of my tax money.

But I may never live to see it!

# Head Selection Increases Yields

*By Sam Preston*

County Agent, Flint Hill, Va.

THE accompanying picture shows a section of a field which was seeded to wheat that was head-selected from a field of V.P.I. No. 112 certified stock. The selection was made by going through the field at harvest time and cutting off the longest and fullest heads. When they were sufficiently dry they were flailed out and the seed kept and seeded separately in the center of a field seeded to the mother stock. Only a drill width separated the two seedings. The whole field was treated exactly alike and seeded at the same time. The head-selected plot threshed out 5½ bushels per acre more than the remainder of the field which was seeded to the stock from which the selection was made.

This is only one of many cases in which yields have been very materially increased on Virginia farms by the simple process of field selection. Starting from a small selection, one can in two years time produce a sufficient quantity of high yielding seed for a full seeding of his whole crop.


## Lady Skyline Champion Hen Sets World Record With *Reef Brand*

235 eggs in 235 consecutive days is the record of Lady Skyline, a little white Leghorn hen.

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## NO CATS—NO STRINGS

A lassie of ten years was seated in front of the fire, playing with her pet kitten. The child, who was both religiously and musically inclined, suddenly turned to her mother and asked, "Mother, do cats go to heaven?"

Her mother replied, "I do not believe they do."

"Then where do the angels get their harp strings?"

---

"So he's your little brother! Funny you are so fair and he is so dark."

"Yes, but he was born after Mother dyed her hair."—*Exchange.*

---

He: "If you'll give me your telephone number, I'll call you up some time."

She: "It's in the book."

He: "Fine! What's your name?"

She: "That's in the book, too."—*Exchange.*

---

First Darkey: "What fo' yo' name yo' baby 'Electricity,' Mose?"

Second Darkey: "Well, mah name am Mose, and mah wife's name am Dinah, and if Dinahmose don't make electricity, what does dey make?"—*General Electric News.*

---

"I'm surprised at your tailor turning you out like that."

"It's not his fault. He can never get the right measurements—I'm so ticklish!"—*The Passing Show* (*London*).

## AND SHE WOULDN'T BUY IT

Once upon a time there was a Scotchman who was engaged to a girl who became so fat that he wanted to break the engagement. But the girl couldn't get her ring off, so he had to marry her.

---

"Say, there goes that rich boy from Chicago with his guardian.

"Oh, yes, Montgomery and Ward."—*Cornell Widow.*

---

Employer—How does it happen that your name is Allen and your mother's name is Brown?"

New Boy—Well, she married again and I didn't.

---

Magistrate—"Did you or did you not, strike the policeman?"

Prisoner—"The answer is in the infirmary."

---

Rastus: "Here's dat quartah Ah borrowed from you last year."

Bones: "Yuh done kept it so long Ah don't know ef its wuff while fo' me to change mah opinion of yuh just fo' two bits."—*Stevens Stone Mill.*

---

Father, to youngster just put to bed: "Now what are you crying about?"

Child: "I wanna drink."

Father: "So do I. Go to sleep."

---

"What kind of boys go to heaven?" asked the Sunday school superintendent.

"Dead boys!" cried the youngest member of the infant class.—*Judge.*

# WORLD'S RECORD Potato Yield

## 64,707¾ lbs. *from* one acre

THE Stockton, Calif., potato growing district has established another high mark of accomplishment in potato growing. Frederick H. Rindge, of Stockton, last fall produced 64,707¾ pounds of potatoes from one acre, a new world's record. This new high yield eclipses the former world's record, of 62,293 pounds from one acre, made by the Zuckerman brothers of Stockton, in 1926.

In both cases these yields were made on the good peat soil of the San Joaquin Delta. The soil was well prepared and plenty of high grade seed were used. Both of the record acres were fertilized with one ton per acre of an 0-23-24 fertilizer.

You may not aspire to world's records, however, you certainly are interested in the best methods of profitable potato production. A fertilizer that contains plenty of potash will help you increase yields, improve quality, and reduce production costs per bushel.

*Literature on the better methods of potato production will be sent you free upon receipt of your request.*

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# Potash Pays